

Environmental Assessment of the Placement of the All Hazard Alert Warning System at 15 Locations on Guam

Prepared for:

**Guam Homeland Security Office of Civil Defense
and the
Federal Emergency Management Agency Region IX**

Prepared by:

EA Engineering, Science, and Technology, Inc.

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FEMA



Environmental Assessment of the Placement of the All Hazard Alert Warning System at 15 Locations on Guam

Prepared for:

Guam Homeland Security Office of Civil Defense
221B Chalan Palasyo
Agana Heights, Guam 96910

and

FEMA, Region IX
U.S. Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, California 94607

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Abbreviations and Acronyms

ACHP	Advisory Council on Historic Preservation
AHAWS	All Hazard Alert Warning System
AQCR	Air Quality Control Region
ARPA	Archaeological Resource Protection Act
BAT	Best Available Technology
BMP	Best Management Practice
BSP	Bureau of Statistics and Plans
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CH ₄	methane
CO	carbon monoxide
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DAWR	Department of Agriculture and Wildlife Resources
dB	decibel
dBA	A-weighted sound level measurements
DHS	Department of Homeland Security
DLM	Department of Land Management
DOPAA	Description of the Proposed Action and Alternatives
DPW	Department of Public Works
EA	Environmental Assessment
EFH	Essential Fish Habitat
EHP	Environmental and Historical Preservation
EIS	Environmental Impact Statement
EMPG	Emergency Management Performance Grant
EO	Executive Order
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FR	Federal Register
GDWR	Guam Department of Agriculture and Wildlife Resources
GHS	Guam Homeland Security
GEPA	Guam Environmental Protection Agency
GHPO	Guam Historic Preservation Office
GovGuam	Government of Guam
GTIP	Guam Transportation Improvement Plan
GWA	Guam Waterworks Authority
HSWA	Hazardous and Solid Waste Amendments

HUD	Housing and Urban Development
LEED	Leadership in Energy and Environmental Design
MARAD	Maritime Administration
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Levels
MCLG	Maximum Contaminant Level Goals
MCOG	Mayor's Council of Guam
mg/m ³	milligrams per cubic meter
MSA	Magnuson-Stevens Fishery Conservation and Management Act of 1976 as amended
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO ₂	nitrogen dioxide
NO _x	oxides of nitrogen
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O ₃	ozone
OCD	Office of Civil Defense
PAG	Port Authority of Guam
Pb	lead
PM ₁₀	particulate matter equal to or less than 10 microns in diameter
PM _{2.5}	particulate matter equal to or less than 2.5 microns in diameter
PPA	Pollution Prevention Act
ppm	parts per million
PSA	Public Service Announcement
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SIP	State Implementation Plan
SO ₂	sulfur dioxide
tpy	tons per year
TSCA	Toxic Substance Control Act
µg/m ³	micrograms per cubic meter
UOG	University of Guam
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound

1 **Cover Sheet**

2
3 **Environmental Assessment of the Placement of the All Hazard Alert Warning**
4 **System at 15 Locations on Guam**

5
6 **Responsible Agencies:** Guam Homeland Security Office of Civil Defense (GHS/OCD) and
7 U.S. Department of Homeland Security’s Federal Emergency Management Agency (FEMA),
8 Region IX

9 **Affected Location:** Guam

10 **Report Designation:** Environmental Assessment (EA)

11 **FEMA Project Number:** EMPG EMW-2012-EP-00021-(16625)

12
13 **Abstract:** The GHS/OCD has applied to FEMA for funding under the Emergency Management
14 Performance Grant (EMPG) program to install 15 warning sirens, purchased earlier using DHS
15 Grant Program funds. The sirens will be part of an emergency management All-Hazards Alert
16 Warning System (AHAWS) for the residents and other occupants of Guam.

17 The Post-Katrina Emergency Management Reform Act, as amended, (6 U.S.C. 762) and the
18 Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, (42 U. S. C.
19 5121 et seq.) authorize FEMA to make grants for the purpose of providing a system of
20 emergency preparedness for the protection of life and property in the United States from all
21 hazards. The purpose of the action is to provide EMPG funding to GHS to enhance the
22 emergency preparedness of the residents and other occupants of Guam and to better protect life
23 and property from all hazards by providing a warning system.

24 There is a need for a hazard warning system that could be quickly activated and would have
25 continuous coverage over areas potentially affected by hazards that could affect low lying areas.
26 For example, an earthquake occurring in the Philippines could trigger a tsunami that could reach
27 the southeastern areas of Guam within thirty minutes of occurrence. Action is needed because
28 there currently is no hazard alert warning system with continuous coverage over all populated
29 areas on Guam that could be impacted in the event of a tsunami. The warning system would also
30 be used to notify residents and other occupants of Guam of the pending occurrence of other
31 hazards.

32 **Proposed Action:** GHS proposes to place the AHAWS at 15 locations on Guam. The AHAWS
33 would consist of a communication and control system comprised of a high power voice and siren
34 speaker assembly mounted on a concrete pole. The siren system is a two-way radio
35 communications system capable of activating each remote AHAWS individually or at the same
36 time, to sound a siren tone, stored digital voice message or a combination to include activation of
37 blue blinking lights. The AHAWS would be mounted on concrete poles with average heights of
38 55 feet, depending on what is required for the best coverage of siren tones and messages in each
39 of the selected areas. Each AHAWS would be protected by a fourteen (14) foot by eight (8) foot
40 by, seven (7) foot high perimeter fence with eight (8) inch thick walls. Slight variations of the
41 size of the perimeter fence would occur at a few locations. There would be a three (3) foot wide

1 concrete walkway around the perimeter of the fence. The main trigger control for the AHAWS
2 would be at the GHS/OCD.

3
4 Operation of the AHAWS would include testing by GHS/OCD on a monthly basis to ensure that
5 all AHAWSs remain in proper working condition. Following the completion of installation of
6 the AHAWSs, GHS/OCD would conduct Public Service Announcements (PSAs) and outreach to
7 inform the public of the system, associated monthly testing and actions to take during the tests.
8 Outreach would also be conducted prior to each monthly testing event. The testing would occur
9 on the same weekday each month at 3:00 PM and would consist of approximately five (5)
10 seconds for testing notification, ten (10) seconds for sounding the siren and five (5) seconds to
11 announce the end of the test. The monthly tests would also include testing of the tower light.

12 The priorities and locations for the 15 warning sirens were determined by a Government of
13 Guam (GovGuam) Multi-Agency Assessment Team comprised of the Mayor's Council of Guam
14 (MCOG), Department of Land Management (DLM), Department of Public Works (DPW),
15 Guam Waterworks Authority (GWA), Guam Environmental Protection Agency (EPA),
16 Department of Education, Department of Parks and Recreation, and Port Authority of Guam
17 (PAG) led by the GHS/OCD based on requirements to ensure that there were no gaps in
18 coverage of the AHAWS for residents and other occupants in potential tsunami hazard areas. It
19 was determined that a minimum of 60 decibels (dB) would be necessary to be maintained
20 between siren locations to ensure that residents could hear the sirens over the entire tsunami
21 hazard warning area. Siren and associated tower locations were based on micro-siting which
22 considered terrain characteristics (presence of hills, mountains and low lying terrain in the
23 warning areas), prevailing wind direction and other factors that could affect the propagation of
24 sound. It was also necessary to consider locations that would allow all sirens to be activated
25 simultaneously by a transmitter located at GHS/OCD. Once the potential siren locations were
26 determined based on the technical siting criteria, close coordination was conducted with area
27 landowners to ensure that the AHAWS sites were all located on government owned properties.
28 The exception was the Nikko Hotel location (Site 15). No government owned property occurred
29 within the required area for the siren location. As a result, a special agreement is being
30 negotiated between the hotel and GovGuam to locate the tower on the hotel property. This
31 special agreement would be executed before installing the tower or conducting any site
32 preparation.

33 The tower locations determined based on the GovGuam Multi-Agency Assessment Team were
34 based on criteria necessary to ensure adequate coverage of the AHAWS for residents and other
35 occupants located within the tsunami hazard areas on Guam. The locations were considered to
36 be the most effective and efficient and the necessary locations to address the need for an
37 affective tsunami hazard warning system on Guam. As a result, the EA evaluates two
38 alternatives for the placement of the AHAWS on Guam. Alternative 1 includes development of
39 the AHAWS at 15 locations on Guam as shown in Figure 1-1 in the EA, and Alternative 2 which
40 is the No Action Alternative.

41

1 The EA provides an assessment of the effects of implementing the Proposed Action on the
2 following resource areas: land use, noise, air quality and greenhouse gas emissions, safety,
3 geological resources, water resources, biological resources, visual resources, cultural resources,
4 coastal zone, infrastructure, and socioeconomic resources and environmental justice.

5 The EA identifies several potential adverse effects, but determines that implementation of best
6 management practices (BMPs) as presented in the EA would prevent the Proposed Action
7 from resulting in more than negligible impacts. As discussed in Chapter 3, and summarized in
8 Chapter 5, mitigation measures and BMPs would be implemented to minimize or eliminate
9 potential adverse effects. Beneficial effects would be expected as a result of establishing an
10 AHAWS system with continuous coverage over all populated areas on Guam that could be
11 impacted in the event of a tsunami. The warning system would also provide a warning system
12 to notify residents and other occupants of Guam of the pending occurrence of other hazards.

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**Environmental Assessment of the All Hazard Alert Warning System
at 15 Locations on Guam**

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1 **1.0 Purpose and Need for the Action**

2 This section presents an introduction to important issues relevant to the project, the purpose of
3 and need for the action, the project location, a summary of key environmental compliance
4 requirements, public and stakeholder outreach, and an overview of the organization of the EA.

5 **1.1 Introduction**

6 The Guam Homeland Security (GHS) Office of Civil Defense (OCD) has applied to the Federal
7 Emergency Management Agency (FEMA) for funding under the Emergency Management
8 Performance Grant (EMPG) program to install 15 warning sirens, purchased earlier using
9 Homeland Security Grant Program funds. The sirens will be part of an emergency management
10 All Hazards Alert Warning System (AWAWS) for the residents and other occupants of Guam.

11 **1.2 Purpose for the Proposed Action**

12 The Post-Katrina Emergency Management Reform Act, as amended, (6 U.S.C. 762) and the
13 Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, (42 U. S. C.
14 5121 et seq.) authorize FEMA to make grants for the purpose of providing a system of
15 emergency preparedness for the protection of life and property in the United States from all
16 hazards. The purpose of the action is to provide EMGP funding to GHS/OCD to enhance the
17 emergency preparedness of the residents and other occupants of Guam and to better protect life
18 and property from all hazards by providing a warning system.

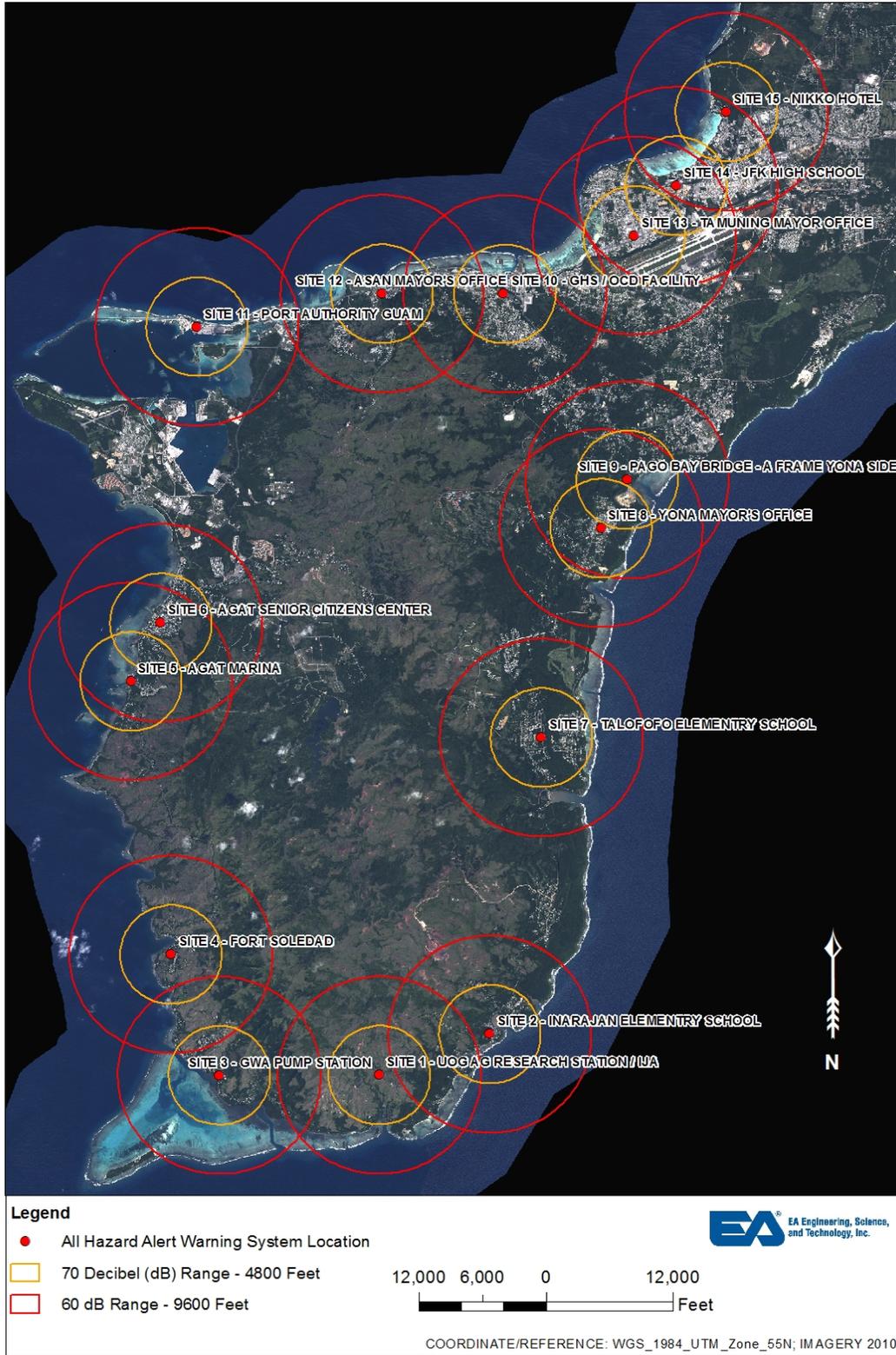
19 **1.3 Need for the Proposed Action**

20 There is a need for a hazard warning system that could be quickly activated and would have
21 continuous coverage over areas potentially affected by hazards that could affect low lying areas.
22 For example, an earthquake occurring in the Philippines could spawn a tsunami that could reach
23 the southeastern areas of Guam within thirty minutes of occurrence. Action is needed because
24 there currently is no hazard alert warning system with continuous coverage over all populated
25 areas on Guam that could be impacted in the event of a tsunami. The warning system would also
26 be used to notify residents and other occupants of Guam of the pending occurrence of other
27 hazards (i.e. typhoons, tidal surges, etc.).

28 **1.4 Project Location**

29 The AHAWS sirens would be installed in 15 locations around the southern two thirds of the
30 coastal perimeter of Guam. **Figure 1-1** shows the locations of the 15 AHAWS sites on Guam
31 including the approximate extent of the 70 and 60 decibel (dB) sound ranges associated with the
32 AHAWS systems at each site.

Figure 1-1. Approximate AHAWS Siren Locations



1 **1.5 Scope of the Environmental Review**

2 **1.5.3 National Environmental Policy Act**

3 The National Environmental Policy Act (NEPA) is a Federal statute requiring the identification
4 and analysis of potential environmental impacts of proposed Federal actions before those actions
5 are taken. NEPA established the Council on Environmental Quality (CEQ) who is charged with
6 the development of implementing regulations and ensuring agency compliance with NEPA.
7 CEQ regulations mandate that all Federal agencies use a systematic interdisciplinary approach to
8 environmental planning and the evaluation of actions that might affect the environment.

9 The process for implementing NEPA is codified in Title 40 Code of Federal Regulations (CFR)
10 Parts 1500–1508, Regulations for Implementing the Procedural Provisions of the National
11 Environmental Policy Act. The CEQ was established under NEPA to implement and oversee
12 Federal policy in this process. To this end, the CEQ regulations specify that an EA be prepared
13 to briefly provide evidence and analysis for determining whether to prepare an Environmental
14 Impact Statement (EIS) or a Finding of No Significant Impact (FONSI), aid in an agency’s
15 compliance with NEPA when an EIS is unnecessary, and facilitate preparation of an EIS when
16 one is necessary.

17 FEMA's Regulations at 44 CFR Part 10, the DHS’s Management Directive 5100.1, and the CEQ
18 Regulations at 40 CFR Part 1500-1508 implement the NEPA requirements for FEMA.

19 This EA evaluates potential environmental consequences associated with a proposed action and
20 considers alternative courses of action. The intent of NEPA is to protect, restore, or enhance the
21 environment through well-informed Federal decisions. This EA was prepared in accordance
22 with NEPA guidelines, and it examines the consequences of the proposed action on the
23 environment. This document analyzes the short-term, long-term, and cumulative effects of the
24 Action Alternative, along with the No Action Alternative.

25 **1.5.4 Environmental Historical Preservation Process**

26 The Environmental and Historic Preservation (EHP) review process integrates the protection and
27 enhancement of environmental, historic, and cultural resources into FEMA's mission, programs
28 and activities; ensures that FEMA's activities and programs related to disaster response and
29 recovery, hazard mitigation, and emergency preparedness are conducted in compliance with
30 Federal environmental and historic preservation laws and Executive Orders (EOs); and provides
31 environmental and historic preservation technical assistance to FEMA staff, local, territorial and
32 Federal partners, and grantees and sub-grantees. The EHP review process takes into
33 consideration many Federal laws and EOs including the NEPA; National Historic Preservation
34 Act (NHPA); EO 11988, Floodplain Management; Endangered Species Act (ESA); and E O
35 12898, Environmental Justice.

36 **1.5.5 Applicable Environmental and Regulatory Compliance**

37 To comply with NEPA, the planning and decision making process for Federal actions involves a
38 study of relevant environmental statutes and regulations. The NEPA process, however, does not
39 replace procedural or substantive requirements of other environmental statutes and regulations.
40 It addresses them collectively in the form of an EA or EIS, which enables the decision maker to

1 have a comprehensive view of major environmental issues and requirements associated with a
2 proposed action. According to CEQ regulations, the requirements of NEPA must be integrated
3 “with other planning and environmental review procedures required by law or by agency so that
4 all such procedures run concurrently rather than consecutively.”

5 Through the analysis conducted as part of the EA, the Proposed Action and alternatives are
6 assessed to help ensure activities are conducted in compliance with all applicable laws and
7 regulations. **Appendix A** contains a representative listing and a more detailed description of
8 laws, regulations, and EOs associated with resource areas that might apply to the Proposed
9 Action.

10 **1.5.6 Interagency and Intergovernmental Coordination for Environmental Planning** 11 **and Public Involvement**

12 NEPA requirements ensure that environmental information is made available to the public during
13 the decision making process and prior to actions being taken. The premise of NEPA is that the
14 quality of Federal decisions will be enhanced if proponents provide information to the public and
15 involve the public in the planning process. CEQ regulations implementing NEPA specifically
16 state, “There shall be an early and open process for determining the scope of issues to be
17 addressed and for identifying the significant issues related to a proposed action. This process
18 shall be termed “scoping” (40 CFR 1501.7)”. The Intergovernmental Coordination Act and EO
19 12372, Intergovernmental Review of Federal Programs, require Federal agencies to cooperate
20 with and consider state, territorial and local views in implementing a Federal proposal. It is the
21 Federal agency’s responsibility to expedite the preparation and review of NEPA documents in a
22 way that is responsive to the needs of the public while meeting the spirit and intent of NEPA and
23 complying with all NEPA provisions.

24
25 The Proposed Action is based on the work conducted by GHS/OCD in coordination with a
26 Government of Guam (GovGuam) Multi-Agency Assessment Team comprised of the Mayor’s
27 Council of Guam (MCOG), Department of Land Management (DLM), Department of Public
28 Works (DPW), Guam Waterworks Authority (GWA), Guam Environmental Protection Agency
29 (EPA), Department of Education, Department of Parks and Recreation, and Port Authority of
30 Guam (PAG). Through the NEPA process, and in compliance with other applicable Federal
31 regulations (e.g., ESA and NHPA), FEMA and GHS/OCD conducted an informal scoping
32 program with other relevant Federal, territorial, and local agencies including the U.S. Fish and
33 Wildlife Service (USFWS); Guam Historic Preservation Office (GHPO); Guam Department of
34 Agriculture and Wildlife Resources (DAWR), and the National Marine Fisheries Service
35 (NMFS). Input obtained to date through this coordination is reflected in the EA. **Appendix C**
36 includes copies of correspondence and documentation with agencies associated with this EA. In
37 addition, pursuant to EO 11988 (Floodplain Management), FEMA and GHS/OCD notified the
38 public of the potential to take an action in the floodplain, as described in **Section 3.8**. A copy of
39 this initial public notice is provided in **Appendix C**. No comments on the Floodplain
40 Management public notice were received.

41
42 FEMA and GHS/OCD will circulate the EA for a 15-day public comment period. The EA will
43 be made available at GHS/OCD’s website and local repositories. FEMA and GHS/OCD will
44 notify the public that the EA is available for review via direct mailing to known interested parties

1 (Appendix D), GHS/OCD’s website, and publication in the *Marianas Variety*. During the
2 public comment period, FEMA will accept written comments on the EA addressed to: FEMA
3 Region IX EHP, Guam AHAWS EA, 1111 Broadway, Suite 1200, Oakland, California 94607 or
4 fema-rix-ehp-documents@fema.dhs.gov. At the end of the comment period, FEMA and
5 GHS/OCD will review the comments and consider them in the decision-making process before
6 notifying the public of the final determination (either a FONSI or a notice that an EIS will be
7 prepared).

8 **1.6 Organization of the EA**

9 This EA is organized into eight sections, not including appendices.

10 **Section 1** contains background information, a description of the purpose of and need for
11 the action, the project location, a description of the applicable regulatory requirements,
12 and an introduction to the organization of the EA.

13 **Section 2** provides a detailed description of the Proposed Action, the No Action
14 Alternative and the decision to be made.

15 **Section 3** includes a general description of the biophysical resources and baseline
16 conditions that could potentially be affected by the Proposed Action or the No Action
17 Alternative, and it presents an analysis of the environmental consequences.

18 **Section 4** includes an analysis of the potential cumulative impacts.

19 **Section 5** includes the special procedures and actions to minimize impacts.

20 **Section 6** discusses environmental commitments.

21 **Section 7** lists the preparers of the document.

22 **Section 8** includes sources of information used in the preparation of the document.

23 **Appendix A** includes examples of relevant laws, regulations, and other requirements that
24 are often considered as part of an EA.

25 **Appendix B** includes correspondence pertaining to coastal zone consistency.

26 **Appendix C** includes copies of correspondence and documentation with agencies
27 associated with this EA and agency and public comments received on the EA.

28 **Appendix D** includes the list of known interested parties for EA review.

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1 **2.0 Description of the Proposed Action and Alternatives**

2 This chapter provides a detailed description of the process for selecting the alternatives, the
3 Proposed Action, the Preferred Alternative and the No Action Alternative.

4 **2.1 Process for Selecting the Alternatives**

5 As discussed in **Section 1.4.1**, the NEPA process evaluates potential environmental
6 consequences associated with a proposed action and considers alternative courses of action.
7 Reasonable alternatives must satisfy the purpose of and need for action, which are defined in
8 **Section 1.2**.

9 Under the Proposed Action, the GHS/OCD is proposing to use FEMA EMGP funding to install
10 15 warning sirens purchased earlier using Homeland Security Grant Program funds. The sirens
11 would be part of an emergency management AHAWS for the residents and other occupants of
12 Guam. The priorities and locations for the 15 warning sirens were determined by a Government
13 of Guam (GovGuam) Multi-Agency Assessment Team comprised of the Mayor’s Council of
14 Guam (MCOG), the Department of Land Management (DLM), the Department of Public Works
15 (DPW), the Guam Waterworks Authority (GWA), the Guam Environmental Protection Agency
16 (GEPA), the Department of Education, the Department of Parks and Recreation, and the Port
17 Authority of Guam (GPA) led by the GHS/OCD based on requirements to ensure that there were
18 no gaps in coverage of the AWAWS for residents and other occupants in potential tsunami
19 hazard areas.

20 Multi-Agency Assessment Team determined that a minimum of 60 dB would be necessary to be
21 maintained between siren locations to ensure that residents and other occupants could hear the
22 sirens over the entire tsunami hazard warning area. Higher dB levels were considered but it was
23 determined that sound levels would be too high in close proximity to the siren locations. Hard
24 wiring the sirens to adjacent power sources or running power to the siren locations was
25 considered because existing power sources occur in proximity to most of the considered sites.
26 Use of solar energy was determined by the Multi-Agency Assessment Team to be the preferred
27 means to supply power because power would be available to operate the AHAWS even during
28 situations when regional power sources were not available, as could be expected under various
29 hazard conditions. Siren and associated tower locations were based on micro-siting which
30 considered terrain characteristics (presence of hills, mountains and low lying terrain in the
31 warning areas), prevailing wind direction and other factors that could affect the propagation of
32 sound. It was also necessary to consider locations that would allow all sirens to be activated
33 simultaneously by a transmitter located at GHS/OCD. The Multi-Agency Assessment Team
34 considered various tower heights for the sirens, but a height of 55 feet in most cases, was
35 considered to be enough to ensure a minimum 60 dB level of sound between the siren locations.
36 Fifty-five feet was also determined to be high enough to maintain a communication frequency
37 between all sites so that the AHAWS could be activated remotely from the GHS/OCD facility.
38 Higher tower heights were considered by the assessment team, but were determined to not be
39 necessary to maintain minimum sound levels and frequency connection between the AHAWS
40 locations. Pole materials including wood, steel and concrete were considered. Concrete was
41 determined to be necessary to ensure that the towers would remain standing even during extreme
42 conditions associated with typhoons.

1 Once the potential siren locations were determined based on the technical siting criteria, close
2 coordination was conducted with area landowners to ensure that the AHAWS sites were all
3 located on government owned properties. The exception was the Nikko Hotel location (Site 15).
4 No government owned property occurred within the required area for the siren location. As a
5 result, a special agreement is being negotiated between the hotel and GovGuam to locate the
6 tower on the hotel property. This special agreement would be executed before installing the
7 tower or conducting any site preparation.

8 Because the tower locations included in the Proposed Action were based on criteria necessary to
9 ensure adequate coverage of the AHAWS for residents and other occupants located within
10 tsunami hazard areas on Guam, they are considered to be the most effective, efficient and the
11 necessary locations to address the need for an affective hazard warning system on Guam. As a
12 result, the EA will evaluate two alternatives for the placement of the AHAWS at 15 locations on
13 Guam. Alternative 1 includes development of the AHAWS at 15 locations on Guam as shown in
14 **Figure 1-1**, and Alternative 2 is the No Action Alternative.

15 **2.2 Proposed Action**

16 Guam Homeland Security proposes to place AHAWS at 15 locations on Guam. Each AHAWS
17 would consist of a communication and control system comprised of a WPS-2906 Series High
18 Power Voice and Siren speaker assembly (manufactured by Whelen Engineering Company Inc.)
19 mounted on a concrete pole. The siren system is a two-way radio communications system
20 capable of activating each remote AHAWS individually or at the same time, to sound a siren
21 tone, stored digital voice message or a combination to include activation of blue blinking lights.
22 The AHAWS would be mounted on concrete poles with average heights of fifty-five (55) feet,
23 depending on what is required for the best coverage of siren tones and messages in each of the
24 selected areas. Each AHAWS would be protected by fourteen (14) foot by eight (8) foot by
25 seven foot high perimeter fences with eight inch thick walls. Slight variations in the size of the
26 perimeter fence would occur at a few locations. There would be a three (3) foot wide concrete
27 walkway around the perimeter of the fence. The main trigger control for the AHAWS would be
28 at the GHS/OCD.

29 Operation of the AHAWS would include testing by GHS/OCD on a monthly basis to ensure that
30 all AHAWSs remain in proper working condition. Following the completion of installation of
31 the AHAWSs, GHS/OCD would conduct Public Service Announcements (PSAs) and outreach
32 would be conducted to inform the public of the system, associated monthly testing and what to
33 do during the tests. Outreach would also be conducted prior to each monthly testing event. The
34 testing would occur on the same weekday each month at 3:00 PM and would consist of
35 approximately five (5) seconds for testing notification, ten (10) seconds for sounding the siren
36 and five (5) seconds to announce the end of the test.

37 **2.3 Alternatives**

38 As discussed in **Section 2.1**, the tower locations included in the Proposed Action were based on
39 criteria necessary to ensure adequate coverage of the AHAWS for residents and other occupants
40 located within the tsunami hazard areas on Guam as well as to maintain a communication
41 frequency between all sites so that the AHAWS could be activated remotely from the GHS/OCD
42 facility. The locations are considered to be the most effective, efficient and the necessary

1 locations to address the need for an affective hazard warning system. As a result, the EA
 2 evaluates two alternatives for the placement of the AHAWS: Alternative 1 includes
 3 development of the AHAWS at 15 government owned locations on Guam and Alternative 2 is
 4 the No Action Alternative.

5 **2.3.1 Alternative 1: Development of the AHAWS at 15 Locations on Guam**

6 Alternative 1 would include the placement of the AHAWS at the 15 locations as shown in
 7 **Figure 1-1** and described in **Section 2.2**. The AHAWS sirens would be in 15 locations around
 8 the southern two thirds of the coastal perimeter of Guam. **Table 2-1** provides the names of the
 9 sites and their coordinates. Photographs 1 through 15 provide representative photos of each of
 10 the proposed siren sites.

11 **2.3.2 Alternative 2: No Action Alternative**

12 Under Alternative 2, the No Action Alternative, EMPG funding would not be granted to GHS
 13 and no measures would be taken to enhance the emergency preparedness of the residents and
 14 other occupants of Guam and to better protect life and property from all hazards. The AHAWS
 15 would not be constructed at the 15 locations and Guam would continue to rely on the current
 16 approach to notifying people of potential hazards including television and radio announcements
 17 and warnings broadcasted via vehicle mounted speaker systems.

18 **Table 2-1. AHAWS Siren Site Names and Coordinates**

Site	Site Name	Approximate Siren Coordinates	
		Latitude	Longitude
Site-1	UOG Agricultural Research Station / Ija	13.26281084	144.71762020
Site-2	Inarajan Elementary School	13.274038718	144.746897512
Site-3	GWA Pump Station	13.26236554	144.675101270
Site-4	Fort Soledad	13.294613063	144.661925155
Site-5	Agat Marina	13.36760778	144.65057045
Site-6	Agat Senior Citizen Center	13.38337794	144.65839588
Site-7	Talofofo Elementary School	13.353565151	144.759874598
Site-8	Yona Mayor’s Office	13.409756338	144.775214010
Site-9	Pago Bay Bridge A-Frame – Yona Side	13.422758450	144.782026939
Site-10	GHS/OCD Facility	13.47238980	144.74870226
Site-11	PAG	13.46268183	144.66724582
Site-12	Asan Mayor’s Office	13.47212067	144.71635288
Site-13	Tamuning Mayor’s Office	13.48817105	144.78335186
Site-14	JFK High School	13.50162800	144.79431968
Site-15	Nikko Hotel	13.52153179	144.80754301

1 **2.3.3 Preferred Alternative**

2 Implementation of the Proposed Action as identified in **Section 2.3.1** (Alternative 1) is the
3 Preferred Alternative.

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6 **Photo 1:** Looking south towards the UOG Agricultural Research Station – Ija site (Site-1).



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Photo 2: Looking north towards the Inarajan Elementary School site (Site-2).



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Photo 3: Looking south towards the GWA Pump Station site (Site-3).



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Photo 4: Looking west at the Fort Soledad site (Site-4).



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Photo 5: Looking west towards the Agat Marina site (Site-5).



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Photo 6: Looking west towards the Agat Senior Citizen Center site (Site-6).



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Photo 7: Looking south towards the Talofof Elementary School site (Site-7).



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Photo 8: Looking south towards the Yona Mayor's Office site (Site-8).



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Photo 9: Looking east towards the Pago Bay Bridge A-Frame – Yona Side site (Site-9).



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Photo 10: Looking west towards the GHS/OCD Facility site (Site-10).



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Photo 11: Looking west towards the PAG site (Site-11).



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Photo 12: Looking west towards the Asan Mayor's Office site (Site-12).



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Photo 13: Looking west towards the Tamuning Mayor's Office site (Site-13).



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Photo 14: Looking north towards the JFK High School site (Site-14).



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Photo 15: Looking east towards the Nikko Hotel site (Site-15).

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1 **3.0 Affected Environment and Environmental Consequences**

2 **3.1 Chapter Overview**

3 In compliance with NEPA and CEQ guidelines, the description of the affected environment
4 focuses on those resource areas and conditions potentially subject to impacts. These resource
5 areas and conditions include land use, noise, air quality and greenhouse gas emissions, safety,
6 geological resources, water resources, biological resources, visual resources, cultural resources,
7 coastal zone, infrastructure, and socioeconomic resources and environmental justice. Resource
8 areas that were eliminated from further discussion are included in **Section 3.2. Chapter 3.0**
9 addresses the topics that were not dismissed from further consideration as described in **Section**
10 **3.2** for the project area. The resources analyzed in this chapter are those found in immediate
11 proximity to the siren location sites, or resources adjacent to the sites that would be affected by
12 one of the alternatives. The existing conditions of a resource area are considered the baseline
13 against which potential effects of implementing either the Proposed Action or the No Action
14 Alternative can be evaluated.

15 Assessments of existing conditions at each of the proposed AHAWS sites was determined based
16 on review of available information, conversations with GHS personnel and other people familiar
17 with the sites, and site visits conducted by EA Engineering, Science and Technology, Inc. at each
18 of the proposed AHAWS locations. The area in immediate proximity to the sites was
19 characterized for existing conditions. In addition, an area of approximately 300 yards was
20 characterized surrounding each of the sites for land use; general ambient noise characteristics;
21 exiting infrastructure including available site access; landform characteristics; vegetation cover;
22 habitat characteristics, including potential habitat for, or incidental occurrence of, sensitive
23 species; and other characteristics with potential to effect, or be effected by construction and
24 operation of the AHAWS at each of the proposed sites.

25 The specific criteria for evaluating potential environmental effects that could result from
26 implementing Alternative 1 or Alternative 2 are presented under each resource area. The
27 significance of an action is measured in terms of its context and intensity. The following
28 discusses the nature of characteristics that might relate to various environmental effects.

29 ***Short-term or long-term.*** In general, short-term effects are those that would occur only with
30 respect to a particular activity or for a finite period or only during the time required for
31 construction or installation activities. Long-term effects are those that are more likely to be
32 persistent and chronic.

33 ***Direct or indirect.*** A direct effect is caused by an action and occurs contemporaneously at or
34 near the location of the action. An indirect effect is caused by an action and might occur later in
35 time, or be farther removed in distance, but still be a reasonably foreseeable outcome of the
36 action.

37 ***Negligible, minor, moderate, or significant.*** These relative terms are used to characterize the
38 magnitude of an effect. Negligible effects are generally those that might be perceptible but, in
39 their context, are not amenable to measurement because of their relatively minor character.
40 Minor or moderate effects are those that are more perceptible and, typically, more amenable to
41 quantification or measurement. Significant effects are those that, in their context and due to their

1 intensity (severity), have the potential to meet the thresholds for significance set forth in CEQ
2 regulations (40 CFR 1508.27) and therefore, warrant heightened attention and examination for
3 potential mitigation in order to fulfill the policies set forth in NEPA.

4 ***Adverse or beneficial.*** An adverse effect is one having unfavorable or undesirable outcomes on
5 the man-made or natural environment. A beneficial effect is one having positive outcomes on
6 the man-made or natural environment.

7 The information provided for each of the siren sites is based on site visits, interviews, existing
8 information and documentation and correspondence with Federal, territorial and local agencies.

9 **3.2 Resource Areas Not Examined in Detail**

10 The description of the affected environment focuses on those conditions and resource areas that
11 are potentially subject to impacts. Hazardous materials were not considered to be subject to
12 impacts under the alternatives being considered and therefore not analyzed in the EA. The
13 following section discusses hazardous materials and the basis for omitting the resource area from
14 further analysis.

15 **3.2.1 Hazardous Materials**

16 Products containing hazardous materials (such as fuels, oils, lubricants, pesticides, and
17 herbicides) may be procured and used during the proposed construction activities. It is
18 anticipated that the quantity of products containing hazardous materials used for construction and
19 maintenance would be minimal and that the quantity of hazardous and petroleum wastes
20 generated from proposed construction would be negligible. Accidental spills could occur as a
21 result of the proposed construction. A spill could potentially result in adverse effects on wildlife,
22 soils, water, and vegetation. However, the amount of hazardous materials at the construction site
23 would be limited and the equipment necessary to quickly contain any spill would be present on
24 the sites, as described in Chapter 5. Impacts would be negligible.

25 Construction contractors would be responsible for the management of hazardous materials and
26 wastes, which would be handled in accordance with Federal and territorial regulations. There are
27 no known above- or underground storage tanks, or hazardous waste clean-up sites within the
28 proposed project areas. There is an above ground fuel tank adjacent to Site 3 in association with
29 a GWA pump station. The storage tank is fenced and would not be affected by proposed
30 AHAWS construction or operation at Site 3. Actions prescribed in the Guam EPA Spill
31 Prevention Control Countermeasure Program would be implemented in the event of a fuel spill
32 associated with construction activities, as described in Chapter 5. There are no known above- or
33 underground storage tanks, or hazardous waste clean-up sites in close proximity to Sites 1, 2, 4,
34 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15.

35 **3.3 Land Use**

36 **3.3.1 Definition of the Resource**

37 The term land use refers to real property classifications that indicate either natural conditions or
38 the types of human activity occurring on a parcel. In many cases, land use descriptions are
39 codified in local zoning laws. There is, however, no nationally recognized convention or

1 uniform terminology for describing land use categories. As a result, the meanings of various
2 land use descriptions, labels, and definitions vary among jurisdictions.

3 Two main objectives of land use planning are to ensure both orderly growth and compatible uses
4 among adjacent property parcels or areas. Compatibility among land uses fosters the societal
5 interest of obtaining the highest and best uses of real property. Tools supporting land use
6 planning include written master plans/management plans and zoning regulations. In appropriate
7 cases, the locations and extent of actions need to be evaluated for their potential effects on
8 project sites and adjacent land uses. The foremost factor affecting an action in terms of land use
9 is its compliance with any applicable land use or zoning regulations. Other relevant factors
10 include existing land use at the project site, the types of land uses on adjacent properties and their
11 proximity to an action, the duration of a proposed activity, and its permanence.

12 **3.3.2 Existing Conditions**

13 The land use at Site 1 is characterized primarily as agricultural in association with the University
14 of Guam (UOG) Inarajan/Ija Experiment Station. The land surrounding the proposed site is
15 characterized by undeveloped savannah grassland and fallow agricultural fields.

16 The land use at Site 2 is designated as a school zone that is adjacent to a residential community.
17 The proposed site is on a grassed island within a parking lot for the Inarajan Elementary School.

18 Site 3 is adjacent to a GWA pump station on Route 4. Land use to the north and west of the site
19 is characterized by undeveloped land associated with the Geus River. There are apartment
20 buildings across Route 4 to the east of the site. Single residential homes occur to the south of
21 the site on the west side of Route 4.

22 Site 4 is characterized by park land associated with Fort Soledad. The site is located in a rural,
23 undeveloped, open mowed maintained grass lot. There is a ranch to the north of the site and a
24 residential area characterized by apartment complexes across Route 4 to the east of the site.

25 Site 5 is within the Agat Marina adjacent to the Guam Fire and Rescue Facility on its west side.
26 There is a jetty adjacent to the south side of the site, a pier to the west and parking and boat slips
27 associated with the marina to the north of the site. The site is located in the parking lot of the
28 marina.

29 Site 6 is in an opened mowed area associated with the Agat Senior Citizen Center. The Senior
30 Citizens Center building is to the north of the site. There is a park area adjacent to a concrete
31 channelized stream to the south of the site and a residential community to the south and east of
32 the site. Athletic fields and the Marcial Sablan Elementary School are to the west and north of
33 the site.

34 The land use at Site 7 is designated as a school zone associated with the Talofof Elementary
35 School. The site is adjacent to a residential community and a community gymnasium to the
36 south and east. The proposed siren location is in the southeastern corner of an open mowed
37 maintained grass field associated with the school.

38 Site 8 is in an urban area associated with the Yona Mayor's Office. The area around the

1 proposed siren location is a community resource area associated with the mayor’s office, a
2 library, community center and day care center. Residential areas border the community resource
3 area.

4 Site 9 is located adjacent to an a-frame pavilion associated with a rest stop at the Pago Bay
5 Bridge and Pago Bay River on Route 4. There are a few residential homes along Route 4 to the
6 north of the site and the Pago Bay Resort is just to the southeast of the site.

7 Site 10 – The land use at the site is an opened grassed area adjacent to the Guam Homeland
8 Security office located within the Governors Complex and adjacent to a park area.

9 Site 11 is within an industrial area associated with the Guam commercial port facility. The
10 proposed siren location is on the roof of the Administration building and is surrounded by
11 facilities associated with the port.

12 Site 12 is within a community resource area and community center associated with the Asan
13 Mayor’s Office. The site is bordered to the west by Route 1. Surrounding land use is mixed
14 with a church and residential community to the north, an undeveloped area with a few homes and
15 businesses to the south, primarily residential with recreational areas to the east, and Route 1 with
16 spread out businesses and residential homes to the west.

17 Site 13 is adjacent to the Tamuning Mayor’s Office. The area around the proposed siren location
18 is a community resource area associated with the mayor’s office. The area surrounding the
19 community resource area is highly developed with businesses. The Guam Premier Outlets are to
20 the north of the site; tennis courts and businesses are to the south; restaurants and other
21 businesses are to the east; and the Mayor’s office, community center and businesses are to the
22 west.

23 Site 14 is in the northwest corner of the athletic field for JFK High School. The surrounding
24 land use includes JFK athletic fields and the high school to the east and south and hotels and
25 other businesses along San Vitores Road in Tumon to the north and west. The site is on the top
26 of and adjacent to cliffs that were cut in the past to accommodate business development in
27 Tumon.

28 Site 15 is adjacent to Gun Beach Road and an unnamed road to Ohana Oceanview
29 Condominiums across from the entrance to the Nikko Hotel in Tumon. The site is bordered by
30 grassed fields to the north, south and east. The grassed field changes to forested habitat to the
31 north and east of the site. The Nikko Hotel is to the west of the site across Gun Beach Road.

32 All sites except for Site 15 are owned by GovGuam. As described in Section 2.1, Site 15 is
33 owned by the Nikko Hotel. A special agreement is being negotiated between the hotel and
34 GovGuam to locate the tower on the hotel property. This special agreement would be executed
35 before installing the tower or conducting any site preparation.

36 **3.3.3 Evaluation Criteria**

37 A comparative methodology is used to determine potential impacts on land use. There is no
38 current Comprehensive Land Use Plan for Guam. The last Land Use Plan for Guam was

1 finalized in May of 1994. There is a Draft Land Use Plan for North and Central Guam that was
2 compiled in 2009, but it has never been finalized. Therefore, AHAWS construction and
3 operation activities are examined and compared to existing land use conditions. Impacts are
4 evaluated as they relate to the following:

- 5 • Compatibility of the proposed activities with existing land use and land use designations
6 at the proposed project sites and in the surrounding areas
- 7 • Availability of sufficient land within the appropriate land use zone for the proposed
8 activities.

9 Land use compatibility is defined here as the ability of two or more land uses to coexist without
10 conflict. Examples of conflicts include interference of proposed activities with existing
11 activities; insufficient availability of facilities, infrastructure, or resources to safely accommodate
12 a proposed activity; and activities resulting in human health and safety issues due to poor siting.

13 Frequently, compatibility between land uses exists in varying degrees based on the frequency,
14 duration, and intensity of a proposed activity. The land use zone designations preclude proposed
15 activities from being located within a designated zone that would be incompatible with the
16 current or proposed uses. However, an activity could be collocated within a land use zone that it
17 is not normally associated with based on evaluation of its compatibility with nearby activities,
18 including consideration of the availability of facilities and infrastructure, safety of personnel, and
19 sensitive environments. Potential impacts on land use compatibility are based on qualitative
20 assessments. Land disturbance within a given land use zone is not considered a land use impact
21 under these criteria unless the disturbance results from a project that is incompatible with the
22 land use designation.

23 **3.3.4 Alternative 1: Development of the AHAWS at 15 Locations on Guam**

24 No effects to land use would be expected at any of the proposed AHAWS sites under Alternative
25 1. Development of the AHAWS sites would not affect the Guam designated land use or current
26 land use adjacent to the proposed sites.

27 **3.3.5 Alternative 2: No Action Alternative**

28 Under the No Action Alternative, development of the AHAWS would not occur and current land
29 uses would not change. No impacts to land use would be expected as the result of implementing
30 the No Action Alternative.

31 **3.4 Noise**

32 **3.4.1 Definition of the Resource**

33 Sound is defined as a particular auditory effect produced by a given source, for example the
34 sound of rain on the roof. Sound is measured with instruments that record instantaneous sound
35 levels in decibels (dB). A-weighted sound level measurements (dBA) are used to characterize
36 sound levels that can be sensed by the human ear. “A-weighted” denotes the adjustment of the
37 frequency content of a sound-producing event to represent the way in which the average human
38 ear responds to the audible event.

1 Noise and sound share the same physical aspects, but noise is considered a disturbance while
2 sound is defined as an auditory effect. Noise is defined as any sound that is undesirable because
3 it interferes with communication, is intense enough to damage hearing, or is otherwise annoying.
4 Noise can be intermittent or continuous, steady or impulsive, and can involve any number of
5 sources and frequencies. It can be readily identifiable or generally nondescript. Human response
6 to increased sound levels varies according to the source type, characteristics of the sound source,
7 distance between source and receptor, receptor sensitivity, and time of day. How an individual
8 responds to the sound source will determine if the sound is viewed as music to one's ears or as
9 annoying noise. Affected receptors are specific (i.e., schools, churches, or hospitals) or broad
10 (i.e., nature preserves or designated districts) areas in which occasional or persistent sensitivity to
11 noise above ambient levels exists.

12 **Ambient Sound Levels.** Noise levels in residential areas vary depending on the housing density
13 and location. As shown in **Figure 3-1**, a quiet suburban area at nighttime is about 40 dBA,
14 which increases to 60 dBA for a commercial area, and 80 dBA for a loud urban area during the
15 daytime.

16 **3.4.2 Existing Conditions**

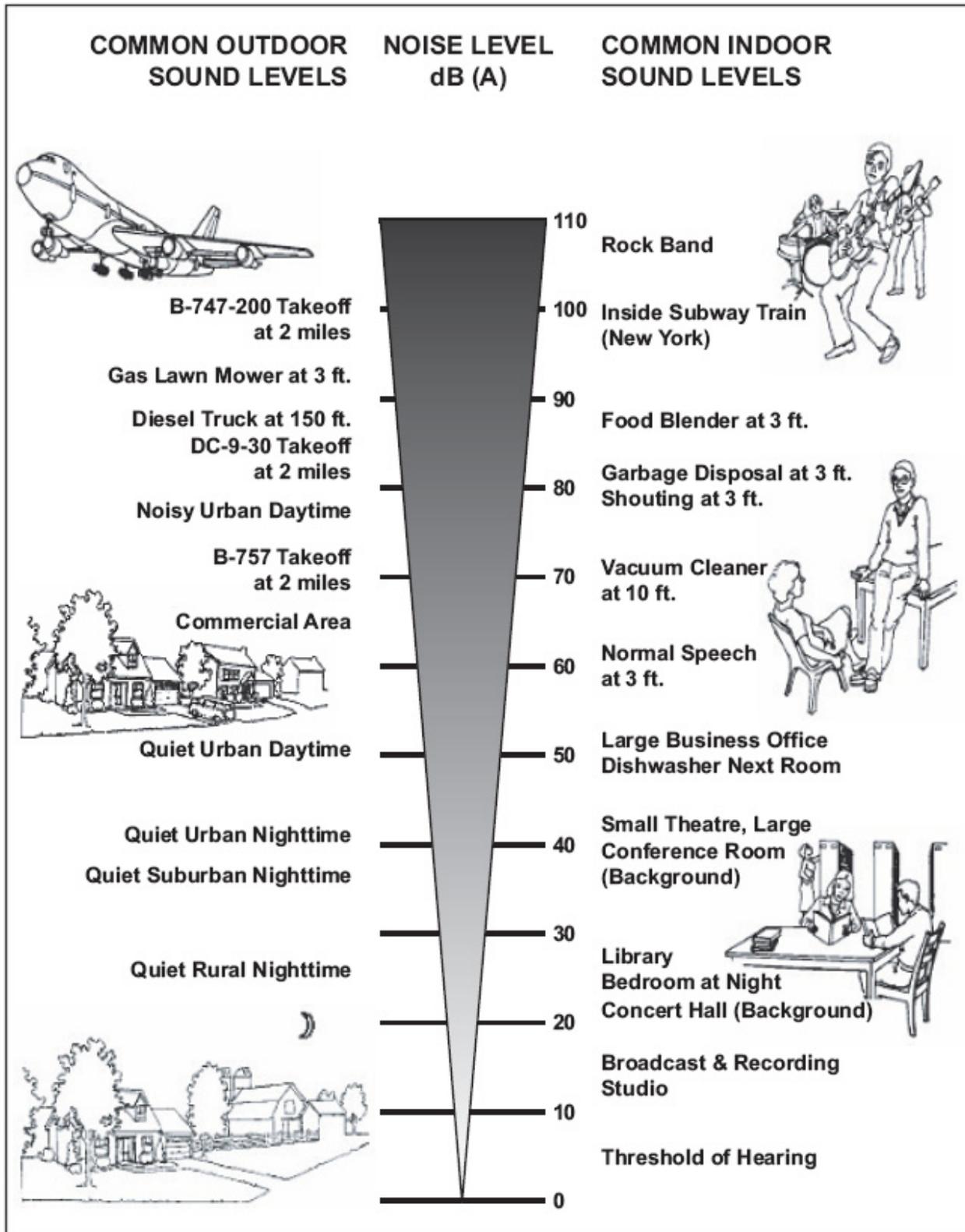
17 Sites 1, 2, 4, 6, 7, 10 and 14 are in locations with surrounding land uses that would be expected
18 to be characterized by low ambient noise levels, estimated to range from 30 to 55 dBA. Sites 3,
19 5, 8, 9, 11, 12, 13 and 15 are located adjacent to busy roadways or other land uses with high
20 ambient noise levels, estimated to range from 55 to 80 dBA (see **Section 3.3**).

21 **3.4.3 Evaluation Criteria**

22 Noise impact analysis typically evaluates potential changes to the existing noise environment
23 that would result from implementation of an action. Effects would be adverse if noise exposure
24 increased to unacceptable noise levels. Projected noise effects were evaluated qualitatively.

25 **3.4.4 Alternative 1: Development of the AHAWS at 15 Locations on Guam**

26 Short-term, direct, minor, adverse effects would be expected to occur due to noise from
27 construction activities. Construction activities would cause an increase in the surrounding noise
28 levels in the project area. Equipment used during construction in the proposed project areas can
29 cause an increase in sound that is well above the ambient level. A variety of sounds come from
30 bulldozers, front end-loaders, trucks, and other work processes. **Table 3-1** lists noise levels
31 associated with common types of equipment that are likely to be used under the Proposed
32 Action. In the immediate vicinity of the construction area, this equipment usually exceeds the
33 ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a
34 quiet suburban area. Consequently, short-term direct minor adverse effects on the ambient noise
35 environment near the 15 proposed AHAWS sites would be expected. Increases from ambient
36 noise levels would be expected to be less at sites 3, 5, 8, 9, 11, 12, 13 and 15 where ambient
37 noise levels are generally high in association with surrounding land uses (see **Section 3.3.2**).
38 Equipment would be used only as necessary during the daylight hours and would be maintained
39 to the manufacture's specifications to minimize impacts on people and other receptors in the
40 surrounding areas associated with equipment noise. Once the construction activities were



Source: Landrum & Brown 2002

Figure 3-1. Common Noise Levels

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1 completed, noise would return to the normal ambient levels. No long-term effects would occur
2 as a result of the construction of the proposed AHAWS sites.

3 Short-term and long-term, direct, minor, adverse effects would be expected to occur during
4 testing of the AHAWS. Testing would occur on a monthly basis to ensure that all AHAWSs
5 remained in proper working condition and to promote disaster preparedness for residents and
6 other occupants of Guam. Based on the specifications for WPS-2906 Series High Power Voice
7 and Siren system, noise levels at 4,800 feet from the source are approximately 70 dB. Noise
8 levels would be expected to increase toward the siren location. Noise levels from 4,800 feet to
9 9,600 feet would be expected to range from approximately 70 dB at 4,800 feet to 60 dB at 9,600
10 feet. Noise levels for the sirens are provided in dB. No dBA equivalent for the sirens was
11 provided. The dBA equivalent for the siren would be expected to be lower than the dB ranges
12 and would represent actual noise that could be heard by the human ear. Adverse effects would
13 result from short-term high dBA levels during testing. Long-term effects would result from
14 testing occurring over the operational life of the AHAWS.

Equipment	Predicted Noise Level at 50 feet (dBA)
Backhoe	80
Front-end loader	85
Haul truck	88
Grader	85
Crane Mobile	83
Paver	89
Roller	74

Source: FHA, FTA 2011

15 **Table 3-1. Predicted Noise Levels for Construction Equipment**

16 Adverse effects from AHAWS testing could also occur as a result of startling or scaring residents
17 and other occupants when the sirens were tested. Prior to AHAWS testing, GHS/OCD would
18 conduct PSAs and outreach to inform the public of the system, monthly testing and what to do
19 during the tests to become better prepared to respond to an actual event. Outreach would also be
20 conducted prior to each monthly testing event. The testing would also occur on the same
21 weekday and at the same time in the afternoon each month and would consist of approximately
22 five seconds for testing notification, ten seconds for sounding the siren and five seconds to
23 announce the end of the test. Pre-notification of testing and consistent scheduling for tests would
24 minimize the potential for startling or scaring people during the testing events. People with
25 sensitivity to loud noises would have an opportunity to take actions to reduce any impacts of
26 increased noise during testing as a result of the pre-notification of testing events. Although the
27 noise level in the immediate vicinity of a AHAWS siren was not provided by the manufacturer
28 and can vary based on tower height, wind, local topography, buildings and other physical
29 features in the proximity, and many other factors, maximum noise levels outside of the AHAWS
30 fenced areas are not expected to exceed 90 to 95 dB. These noise levels are roughly equivalent

1 to the noise levels generated by a food blender or lawn mower at a distance of 3 feet. Therefore,
2 short- or long-term hearing loss or other injury would not occur to the general public, even if no
3 precautions were taken such as moving indoors or using ear protection.

4 **3.4.5 Alternative 2: No Action Alternative**

5 Under the No Action Alternative, development of the AHAWS would not occur. No impacts
6 associated with noise would be expected as the result of implementing the No Action
7 Alternative.

8 **3.5 Air Quality and Greenhouse Gas Emissions**

9 **3.5.1 Definition of the Resource**

10 In accordance with Federal Clean Air Act (CAA) requirements, the air quality in a given region
11 or area is measured by the concentration of various pollutants in the atmosphere. The
12 measurements of these “criteria pollutants” in ambient air are expressed in units of parts per
13 million (ppm), milligrams per cubic meter (mg/m³), or micrograms per cubic meter (µg/m³). The
14 air quality in a region is a result not only of the types and quantities of atmospheric pollutants
15 and pollutant sources in an area, but also surface topography, the size of the topological “air
16 basin,” and the prevailing meteorological conditions.

17 The CAA directed USEPA to develop, implement, and enforce strong environmental regulations
18 that would ensure clean and healthy ambient air quality. To protect public health and welfare,
19 USEPA developed numerical concentration-based standards, or National Ambient Air Quality
20 Standards (NAAQS), for pollutants that have been determined to impact human health and the
21 environment. USEPA established both primary and secondary NAAQS under the provisions of
22 the CAA. NAAQS are currently established for six criteria air pollutants: ozone (O₃), carbon
23 monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), respirable particulate matter
24 (including particulate matter equal to or less than 10 microns in diameter [PM₁₀] and particulate
25 matter equal to or less than 2.5 microns in diameter [PM_{2.5}]), and lead (Pb). The primary
26 NAAQS represent maximum levels of background air pollution that are considered safe, with an
27 adequate margin of safety to protect public health. Secondary NAAQS represent the maximum
28 pollutant concentration necessary to protect vegetation, crops, and other public resources along
29 with maintaining visibility standards. **Table 3-2** presents the primary and secondary USEPA
30 NAAQS (USEPA 2014).

31 Although O₃ is considered a criteria air pollutant and is measurable in the atmosphere, it is not
32 often considered a regulated air pollutant when calculating emissions because O₃ is typically not
33 emitted directly from most emissions sources. Ozone is formed in the atmosphere by
34 photochemical reactions involving sunlight and previously emitted pollutants or “O₃ precursors.”
35 These O₃ precursors consist primarily of nitrogen oxides (NO_x) and volatile organic compounds
36 (VOCs) that are directly emitted from a wide range of emissions sources. For this reason,
37 regulatory agencies attempt to limit atmospheric O₃ concentrations by controlling VOC
38 pollutants (also identified as reactive organic gases) and NO₂.

39
40

1
2

Table 3-2. National Ambient Air Quality Standards

Pollutant	Standard Value		Standard Type
CO			
8-hour Average ^a	9 ppm	(10 mg/m ³)	Primary
1-hour Average ^a	35 ppm	(40 mg/m ³)	Primary
NO₂			
1-hour Average ^b	0.1 ppm	(0.188 µg/m ³)	Primary and Secondary
Annual Arithmetic Mean	0.053 ppm	(.997 µg/m ³)	Primary and Secondary
O₃			
8-hour Average ^d	0.075 ppm	(0.147 µg/m ³)	Primary and Secondary
Pb			
Quarterly Average ^c		1.5 µg/m ³	Primary and Secondary
PM₁₀			
24-hour Average ^e		150 µg/m ³	Primary and Secondary
PM_{2.5}			
Annual Arithmetic Mean ^e		12 µg/m ³	Primary
Annual Arithmetic Mean ^e		15 µg/m ³	Secondary
24-hour Average ^b		35 µg/m ³	Primary and Secondary
SO₂			
1-hour Average ^f	0.075 ppm	(0.197 µg/m ³)	Primary
3-hour Average ^a	0.5 ppm	(1,300 µg/m ³)	Secondary
Source: USEPA 2011			
Notes: Parenthetical values are approximate equivalent concentrations.			
^a Not to be exceeded more than once per year.			
^b The 3-year average of the 98th percentile.			
^c Not to be exceeded			
^d The 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations.			
^e Not to be exceeded more than once per year on average over 3 years.			
^f 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years			

3

4 The CAA and USEPA delegated responsibility for ensuring compliance with NAAQS to the
5 states, territories and local agencies. As such, each state or territory must develop air pollutant
6 control programs and promulgate regulations and rules that focus on meeting NAAQS and
7 maintaining healthy ambient air quality levels. These programs are detailed in State
8 Implementation Plans (SIPs) that must be developed by each state, territory, or local regulatory
9 agency and approved by USEPA. A SIP is a compilation of regulations, strategies, schedules,
10 and enforcement actions designed to move the state or territory into compliance with all
11 NAAQS. Any changes to the compliance schedule or plan (e.g., new regulations, emissions

1 budgets, controls) must be incorporated into the SIP and approved by USEPA. The Guam EPA
2 has been delegated the responsibility for ensuring compliance with the NAAQS.

3 USEPA classifies the air quality in an air quality control region (AQCR) or in subareas of an
4 AQCR according to whether the concentration of criteria pollutants in ambient air exceeds the
5 primary or secondary NAAQS. All areas within each AQCR are therefore designated as either
6 “attainment,” “nonattainment,” “maintenance,” or “unclassified” for each of the six criteria
7 pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS,
8 nonattainment indicates that criteria pollutant levels exceed NAAQS, maintenance indicates that
9 an area was previously designated nonattainment but is now attainment, and an unclassifiable air
10 quality designation by USEPA means that there is not enough information to appropriately
11 classify an AQCR, so the area is considered attainment.

12 The General Conformity Rule requires that any Federal action meet the requirements of a SIP or
13 Federal Implementation Plan. More specifically, CAA Conformity is ensured when a Federal
14 action does not cause a new violation of the NAAQS; contribute to an increase in the frequency
15 or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim
16 progress milestones, or other milestones toward achieving compliance with the NAAQS.

17 The General Conformity Rule applies only to actions in nonattainment or maintenance areas and
18 considers both direct and indirect emissions. The rule applies only to Federal actions that are
19 considered “regionally significant” or where the total emissions from the action meet or exceed
20 the *de minimis* thresholds presented in 40 CFR 93.153. An action is regionally significant when
21 the total nonattainment pollutant emissions exceed 10 percent of the AQCR’s total emissions
22 inventory for that nonattainment pollutant. If a Federal action does not meet or exceed the *de*
23 *minimis* thresholds and is not considered regionally significant, then a full Conformity
24 Determination is not required.

25 Title V of the CAA Amendments of 1990 requires states and local agencies to permit major
26 stationary sources. A major stationary source is a facility (i.e., plant, base, or activity) that can
27 emit more than 100 tons per year (tpy) of any one criteria air pollutant, 10 tpy of a hazardous air
28 pollutant, or 25 tpy of any combination of hazardous air pollutants. However, lower pollutant-
29 specific “major source” permitting thresholds apply in nonattainment areas. For example, the
30 Title V permitting threshold for an “extreme” O₃ nonattainment area is 10 tpy of potential VOC
31 or NO_x emissions. The purpose of the permitting rule is to establish regulatory control over
32 large, industrial-type activities and monitor their impact on air quality.

33 Federal Prevention of Significant Deterioration (PSD) regulations also define air pollutant
34 emissions from proposed major stationary sources or modifications to be “significant” if (1) a
35 proposed project is within 10 kilometers of any Class I area, and (2) regulated pollutant
36 emissions would cause an increase in the 24-hour average concentration of any regulated
37 pollutant in the Class I area of 1 µg/m³ or more [40 CFR 52.21(b) (23)(iii)]. PSD regulations
38 also define ambient air increments, limiting the allowable increases to any area’s baseline air
39 contaminant concentrations, based on the area’s designation as Class I, II, or III [40 CFR
40 52.21(c)].

41

1 Greenhouse gasses including CO₂, methane (CH₄), and nitrous oxide (N₂O) are chemical
2 compounds that trap heat in the atmosphere affecting the earth's temperature. Scientific
3 evidence indicates a trend of increasing global temperatures (i.e., global warming) over the past
4 century due to an increase in global greenhouse gas emissions. On February 18, 2010, the CEQ
5 released a memorandum, *Draft NEPA Guidance on Consideration of the Effects of Climate*
6 *Change and Greenhouse Gas Emissions* (CEQ 2010), which provides guidance for Federal
7 agencies in considering climate change in their decision-making process. The guidance advises
8 that the consideration of climate change address the greenhouse gas emission effects of an
9 action, stating that "if a proposed action would be reasonably anticipated to cause direct
10 emissions of 25,000 metric tons or more of CO₂-equivalent greenhouse gas emissions on an
11 annual basis, agencies should consider this an indicator that a quantitative and qualitative
12 assessment may be meaningful to decision makers and the public" (CEQ 2010).

13 **3.5.2 Existing Conditions**

14 Guam is designated as AQCR No. 246. AQCR No. 246 is in attainment with all of the NAAQS
15 except for SO₂ in some areas. The areas within a 3.5-mile radius of the Piti and Tanguisson
16 Power Plants are nonattainment areas for SO₂. Sites 11 and 12 are within 3.5 miles of the Piti
17 Power Plant and sites 14 and 15 are within 3.5 miles of the Tanguisson Power Plant.

18 **3.5.3 Evaluation Criteria**

19 The environmental consequences on local and regional air quality conditions near an action are
20 determined based upon the increases in regulated pollutant emissions relative to existing
21 conditions and ambient air quality. Specifically, effects on air quality in NAAQS attainment
22 areas would be considered significant if the net increases in pollutant emissions from the action
23 resulted in any one of the following scenarios:

- 24 • Cause or contribute to a violation of any national or territorial ambient air quality
25 standard
- 26 • Expose sensitive receptors to substantially increased pollutant concentrations
- 27 • Represent an increase of 10 percent or more in an affected AQCR emissions inventory
- 28 • Exceed any evaluation criteria established by a SIP.
29

30 **3.5.4 Alternative 1: Development of the AHAWS at 15 Locations on Guam**

31 Short-term, direct, negligible, adverse impacts to air quality would be expected as a result of
32 implementing Alternative 1. Emissions from construction equipment would be expected to be
33 minimal and would only occur during site preparation and AHAWS installation. Construction
34 equipment would be expected to have properly operating emission control systems. This would
35 minimize potential adverse effects to ambient air quality. Cumulative effects to air quality
36 resulting from preparation and AHAWS installation at all 15 sites would also be expected to be
37 negligible. The sites would not all be constructed at the same time and impacts to the overall air
38 quality associated with preparation and AHAWS installation at the sites would be negligible.

39 Sites 11 and 12 are within 3.5 miles of the Piti Power Plant and sites 14 and 15 are within 3.5
40 miles of the Tanguisson Power Plant. Areas within a 3.5-mile radius of the two power plants are
41 in nonattainment for SO₂. Construction of the AHAWS at these sites would be expected to result

1 in short-term, direct, negligible, adverse impacts to air quality as discussed above, and would not
2 be expected to affect to overall air quality of the area. Emissions associated with construction at
3 these locations would be far below *de minimis* thresholds for SO₂ and a full General Conformity
4 Rule determination is not required.

5 Because the AHAWS would use solar energy as the primary power source, no air quality impacts
6 associated with monthly testing of the AHAWS would occur.

7 **3.5.5 Alternative 2: No Action Alternative**

8 Under the No Action Alternative, development of the AHAWS would not occur. No impacts to
9 air quality would be expected as the result of implementing the No Action Alternative.

10 **3.6 Safety**

11 **3.6.1 Definition of the Resource**

12 A safe environment is one in which there is no, or an optimally reduced, potential for death,
13 serious bodily injury or illness, or property damage. Human health and safety addresses (1)
14 workers' health and safety during facilities construction, and (2) public safety during
15 construction activities and during subsequent operations of those facilities.

16 Safety is largely a matter of adherence to regulatory requirements imposed for the benefit of
17 employees and implementation of operational practices that reduce risks of illness, injury, death,
18 and property damage. The health and safety of onsite workers are safeguarded by numerous
19 regulations designed to comply with standards issued by the Occupational Safety and Health
20 Administration (OSHA) and USEPA. These standards specify the amount and type of training
21 required for industrial workers, the use of protective equipment and clothing, engineering
22 controls, and maximum exposure limits for workplace stressors.

23 Safety and accident hazards can often be identified and reduced or eliminated. Necessary
24 elements for an accident-prone situation or environment include the presence of the hazard itself
25 together with the exposed (and possibly susceptible) population. The degree of exposure
26 depends primarily on the proximity of the hazard to the population. Activities that can be
27 hazardous include transportation, maintenance and repair activities, and the creation of highly
28 noisy environments. The proper operation, maintenance, and repair of vehicles and equipment
29 carry important safety implications. Extremely noisy environments can also mask verbal or
30 mechanical warning signals such as sirens, bells, or horns.

31 **3.6.2 Existing Conditions**

32 All contractors performing construction activities are responsible for following safety regulations
33 and worker compensation programs, and are required to conduct activities in a manner that does
34 not pose any risk to workers or personnel. Industrial hygiene programs address exposure to
35 hazardous materials, use of personal protective equipment, and availability of Safety Data
36 Sheets. Industrial hygiene is the responsibility of contractors, as applicable. Contractor
37 responsibilities are to review potentially hazardous workplace operations, to monitor exposure to
38 workplace chemical (e.g., hazardous materials) and physical (e.g., noise propagation) hazards, to

1 recommend and evaluate controls (e.g., ventilation, respirators) to ensure personnel are properly
2 protected or unexposed.

3 **3.6.3 Evaluation Criteria**

4 Effects on safety would be adverse if construction personnel or members of the general public
5 were exposed to greatly increased or unacceptable risks. The safety of the construction
6 personnel and general public was evaluated for the potential to introduce new risks or increase
7 existing risks to an unacceptable level, both during and after construction.

8 **3.6.4 Alternative 1: Development of the AHAWS at 15 Locations on Guam**

9 No impacts associated with safety of construction personnel and the general public would be
10 expected as a result of implementing the Proposed Action under Alternative 1. Construction
11 activities at all 15 AHAWS site locations would include the following, as appropriate based on
12 site conditions:

- 13 • Implement site security, health and safety procedures, and noise- and dust- control
14 actions as necessary
- 15 • Install mesh plastic construction fencing or other barriers to establish the construction
16 work zone
- 17 • Post appropriate signage in work zones
- 18 • Establish temporary traffic controls where appropriate
- 19 • Secure heavy equipment left on site.

20
21 Permanent fencing around each AHAWS siren would prevent members of the public from
22 attempting to climb the siren poles or otherwise create a safety hazard.

23 **3.6.5 Alternative 2: No Action Alternative**

24 Under the No Action Alternative, development of the AHAWS would not occur. No impacts
25 associated with safety would be expected as the result of implementing the No Action
26 Alternative.

27 **3.7 Geological Resources**

28 **3.7.1 Definition of the Resource**

29 Geological resources consist of the earth's surface and subsurface materials. Within a given
30 physiographic province, these resources typically are described in terms of geology, topography,
31 soils, and, where applicable, natural hazards and paleontology.

32 Geology is the study of the earth's composition and provides information on the structure and
33 configuration of surface and subsurface features. Such information derives from field analysis
34 based on observations of the surface and borings to identify subsurface composition.
35 Hydrogeology extends the study of the subsurface to water-bearing structures. Hydrogeological
36 information helps in the assessment of groundwater quality and quantity and its movement.

37 Topography pertains to the general shape and arrangement of a land surface, including its height

1 and the position of its natural and human-made features.

2 Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically
3 are described in terms of their complex type, slope, and physical characteristics. Differences
4 among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and
5 erosion potential affect their abilities to support certain applications or uses.

6 **3.7.2 Existing Conditions**

7 ***Geology***

8 Sites 1 and 2 are located in the Bolanos pyroclastic member of the Umatac Formation. The
9 geology is generally characterized by breccias, conglomerates and sandstones. Limestone clasts
10 are conspicuous in some breccias and conglomerates. Estimated thickness of the Bolanos
11 pyroclastic member ranges from 750 to 1000 feet (Siegrist and Reagan 2008).

12 Sites 3, 5, 6, 9 and 12 are located in alluvium. The alluvium is generally characterized by
13 alluvial clay deposits, mostly 30-100 feet thick; muck and clay in marshy estuarine deposits on
14 the west coast; scattered sand and gravel bars within deposits near southeastern river mouths; and
15 clay fill in large sinks in limestone areas (Siegrist and Reagan 2008)

16 Site 4 is located in the Facpi Formation which is generally characterized by pillow lavas
17 interbedded with pillow breccias, hyaloclastites, and sandstones in its basal area. The upper
18 section consists of pillow lavas, breccias, bedded breccias, and conglomerates (Siegrist and
19 Reagan 2008).

20 Site 7, 8 and 10 are located in the Hägatña argillaceous member which generally consists of
21 course-to fine-grained fossiliferous detrital limestone containing 2 to 5 percent disseminated clay
22 and as much as 20 percent clay in pockets and cavities. The maximum aggregate thickness of
23 formation is as much as 500 feet in association with some cliffs (Siegrist and Reagan 2008).

24 Site 11, 13, 14 and 15 are located in the Mariana Limestone which is generally characterized by
25 white, dense, granular, predominantly detrital facies, that developed in a variety of reef platform
26 and off-reef environments. It is the dominant rock unit throughout much of northern Guam
27 where it attains thicknesses estimated at between 550 and 600 feet. The formation is a major
28 source of quarried aggregate (Siegrist and Reagan 2008).

29 ***Topography***

30 The topography at site 1 is flat lying. The topography in the areas surrounding the Site 1 is
31 gently rolling.

32 Site 2 is on a small knoll associated with a constructed island in the Inarajan Elementary School
33 parking lot. The siren would be located on a flat lying area on the top of the knoll.

34 Site 3 is on relatively flat disturbed terrain adjacent to a GWA pump station.

35 Site 4 is on a broad knoll. The siren would be located on a broad flat lying area on top of the
36 knoll.

- 1 Site 5 is on disturbed and graded topography associated with the parking lot of the Agat Marina.
- 2 Site 6 is on gently sloping terrain the dips towards a channelized stream south of the site.
- 3 Site 7 is on flat lying terrain associated with the field around the Talofofo Elementary School.
- 4 Site 8 is on disturbed flat lying terrain adjacent to the Yona Mayor's Office.
- 5 Site 9 is in a created planter like structure at the Pago Bay Bridge. The surface in the structure is
6 flat lying.
- 7 Site 10 is on gently sloping terrain adjacent to a parking lot associated with the Guam Homeland
8 Security Facility.
- 9 Site 11 is on the roof of the Guam Port Authority Administrative Building. The surface where
10 the siren would be located is flat.
- 11 Site 12 is on flat lying disturbed and graded topography adjacent to the Asan Mayor's Office.
12 The siren location would be on an existing concrete pad.
- 13 Site 13 is on relatively flat lying disturbed terrain in between a parking lot and tennis courts.
- 14 Site 14 is on flat terrain associated with the JFK High School athletic field. The terrain drops off
15 abruptly to the north and east in association with cliffs that were excavated to accommodate
16 development in Tumon.
- 17 Site 15 is on gently sloping terrain. The terrain just south and east of the site slopes into a storm
18 water channel that directs flows under Gun Beach Road.

19 ***Soils***

20 The soil on Site 1 is mapped as the Akina silty clay with slopes ranging between 7 to 15 percent.
21 The Akina series consists of well drained soils with medium or rapid runoff and moderately slow
22 permeability. The Akina soils are moderately deep to saprolite and depth to bedrock ranges from
23 20 to 40 inches. They are found in volcanic uplands and formed in residuum from tuff and tuff
24 breccia. The topography in Akina soils is typically gently sloping to very steep (USDA NRCS
25 2014).

26 The soil on sites 2 and 8 is mapped as the Pulantat-Urban land complex with slopes ranging
27 between 7 to 15 percent. The Pulantat series consists of well drained soils with medium to rapid
28 runoff and slow permeability. The Pulantat soils are shallow and depth to limestone bedrock
29 ranges between 10 to 20 inches. They occur on upland plateaus and hills, and formed in
30 residuum derived from argillaceous coralline limestone. The topography in this mapping unit is
31 typically characterized by gently sloping to very steep upland plateaus and hills. The Urban land
32 component of the soil complex is characterized primarily by man-made surfaces such as
33 pavement, concrete or rooftop. Soils associated with the Urban land component are typically
34 highly disturbed (USDA NRCS 2014).

1 The soil on sites 3, 4, 5, 9 and 12 is mapped as the Inarajan clay with slopes ranging between 0
2 and 4 percent. The Inarajan series consists of somewhat poorly drained soils with very slow or
3 slow runoff and slow permeability. The Inarajan soils are deep with depth to bedrock ranging
4 from 40 to 60 inches. The soil formed in alluvium and occurs on broad valley bottoms and
5 coastal plains. The topography in this mapping unit is typically nearly level to gently sloping.
6 Although soils on Site 5 are mapped as the Inarajan series, the site has been previously disturbed
7 and consists entirely of pavement (USDA NRCS 2014).

8 The soil on Site 6 is mapped as the Akina-Urban land complex with slopes ranging between 0
9 and 7 percent. The Akina series consists of well drained soils with medium to rapid runoff and
10 moderately slow permeability. The soil is moderately deep to saprolite and depth to rock ranges
11 between 20 to 40 inches. The soil formed on volcanic uplands in residuum from tuff and tuff
12 breccia. The topography is typically gently sloping to very steep. The Urban land component of
13 the soil complex is characterized primarily by man-made surfaces such as pavement, concrete or
14 rooftop. Soils associated with the Urban land component are typically highly disturbed (USDA
15 NRCS 2014).

16 The soil on Site 7 is mapped as the Guam-Saipan complex with slopes ranging between 0 and 7
17 percent. The Saipan series consists of well drained soils with moderate permeability. The soil is
18 deep to very deep with depth to bedrock ranging from 40 to 80 inches. The soil formed on
19 uplifted limestone plateaus in sediments overlying porous coralline limestone. The soil complex
20 occurs on topography that is typically gently sloping to strongly sloping in association with
21 limestone plateaus (USDA NRCS 2014).

22 The soil on Site 10 is mapped as the Pulantat clay with slopes ranging between 30 and 60
23 percent. The Pulantat series consists of well drained soils with medium to rapid runoff and slow
24 permeability. The Pulantat soils are shallow and depth to limestone bedrock ranges between 10
25 to 20 inches. They occur on upland plateaus and hills and formed in residuum derived from
26 argillaceous coralline limestone. The topography in this mapping unit is typically characterized
27 by gently sloping to very steep upland plateaus and hills (USDA NRCS 2014).

28 The soil on Site 11 is mapped as the Urban land-Ustorthents complex. The Urban land
29 component of the soil complex is characterized primarily by man-made surfaces such as
30 pavement, concrete or rooftop. Soils associated with the Urban land component are typically
31 highly disturbed. The Ustorthents component of the complex is characterized by quarried fill
32 material. Permeability in the mapping unit is moderately rapid and runoff is slow. The proposed
33 siren site is located on top of the Administration building within the Urban land component of
34 this mapping unit (USDA NRCS 2014).

35 The soil on Site 13 is mapped as the Guam-Urban land complex. The Guam series consists of
36 well drained soils with moderately rapid permeability. They are very shallow, with depths to
37 limestone bedrock ranging from 2 to 10 inches. The soil formed on uplifted limestone plateaus
38 in sediments that overlie porous coralline limestone. The Urban land component of the soil
39 complex is characterized primarily by man-made surfaces such as pavement, concrete or rooftop.
40 Soils associated with the Urban land component are typically highly disturbed (USDA NRCS
41 2014).

1 The soil on Sites 14 and 15 is mapped as the Guam cobbly clay loam. Slopes mapped for Site 14
2 range from 3 to 7 percent and from 7 to 15 percent for Site 15. The Guam series consists of well
3 drained soils with moderately rapid permeability. They are very shallow, with depths to
4 limestone bedrock ranging from 2 to 10 inches. The soil formed on uplifted limestone plateaus
5 in sediments that overlie porous coralline limestone (USDA NRCS 2014).

6 ***Geologic Hazards***

7 Earthquake activity affects the island of Guam. Subduction of the Pacific Plate beneath the
8 Philippine Plate (on which Guam is located) forms the Mariana trench (just east of Guam), which
9 is the cause of seismic activity in this region. Guam is in Seismic Probability Zone 4, the zone
10 with the highest probability of ground acceleration caused by seismic activity. Historically,
11 major earthquakes and resulting tsunamis have been recorded in 1849, 1902, 1975, and 1978.
12 More recent earthquakes include one on August 8, 1993, with a magnitude of 8.1, (USGS [2014]
13 recorded the a magnitude of 7.8), one on October 13, 2001, with a magnitude of 7.0, and one on
14 April 27, 2002, with a magnitude of 7.0 on the Richter Scale. (USGS 2013).

15 **3.7.3 Evaluation Criteria**

16 Protection of unique geological features, minimization of soil erosion, and the siting of facilities
17 in relation to potential geologic hazards are considered when evaluating potential impacts of an
18 action on geological resources. Generally, impacts can be avoided or minimized if proper
19 construction techniques, erosion-control measures, and structural engineering design are
20 incorporated into project development.

21 Analysis of potential impacts on geological resources typically includes the following steps:

- 22 • Identification and description of resources that could potentially be affected
- 23 • Examination of an action and the potential impacts this action might have on the resource
- 24 • Assessment of the level of potential impacts
- 25 • Provision of mitigation measures in the event that potentially adverse impacts are
26 identified.

27 Effects on geology and soils would be adverse if they would alter the lithology, stratigraphy, and
28 geological structure that control groundwater quality, distribution of aquifers and confining beds,
29 and groundwater availability; or change the soil composition, structure, or function within the
30 environment. Geologic effects would also be considered adverse if an action would (1) increase
31 the risk to human safety or property from an existing geologic hazard (e.g., improper
32 construction of a building in an area subject to liquefaction) or (2) increase the risk of a geologic
33 hazard occurring (e.g., subsurface mining in the vicinity of a developed area prone to creation of
34 sinkholes).

35 **3.7.4 Alternative 1: Development of the AHAWS at 15 Locations on Guam**

36 Long-term, direct, negligible, adverse impacts to geology would be expected as a result
37 implementing the Proposed Action under Alternative 1. A boring would be extended at each of
38 the sites for the placement of the siren pole. In addition, most of the sites would require grading
39 to level the construction footprint. Impacts to geologic features could occur where the soils are

1 shallow to bedrock such as at sites 2, 8, 10, 13, 14 and 15. No impacts to geology would be
2 expected at Site 11 where the siren is located on the roof of the Guam Port Authority
3 Administration building. Minimal impacts would be expected at sites 5 and 12 where the
4 AHAWSs would be located on existing concrete surfaces.

5 Long-term, direct, negligible, adverse impacts to topography would be expected as a result
6 implementing the Proposed Action under Alternative 1. Minor grading would be needed at most
7 of the sites to level the construction footprint. No grading would be necessary at Site 11 where
8 the siren is located on the roof of the Guam Port Authority Administration building, or at sites 5
9 and 12 where the AHAWSs would be located on existing concrete surfaces.

10 Long-term and short-term, direct, negligible, adverse impacts to soils would be expected as a
11 result implementing the Proposed Action under Alternative 1. With the exception of Site 11,
12 long-term effects would occur as a result of extending boring for the placement of the siren
13 poles. In addition, most of the sites would require grading of the soils to level the construction
14 footprint. Short-term impacts to soils could occur as a result of erosion associated with storm
15 water runoff during and following storm events. During construction, erosion and sedimentation
16 and storm water management practices would be implemented and maintained consistent with
17 the Guam EPA Soil Erosion and Sediment Control Regulations, 10 GCA Chapter 47, Water
18 Pollution Control Act to minimize the potential for soil erosion at the AHAWS sites. Up to
19 approximately 300 square feet of impervious surfaces would be created at all of the proposed
20 locations except sites 5, 11 and 12, where the sirens would be located on existing impervious
21 surfaces. Long-term effects would be expected as a result of an increase in runoff associated
22 with the approximately 15 feet by 20 feet of impervious surfaces at all sites except sites 5, 11 and
23 12. The runoff associated with the increased impervious surface at the sites would be expected
24 to be minimal and storm water BMPs would be implemented as necessary to ensure that any
25 increase in runoff would be properly controlled and would not result in an increase in soil
26 erosion. Impacts to soils would not be expected at Site 11 where the siren would be located on
27 the roof of the Guam Port Authority Administration building, or at sites 5 and 12 where the
28 AHAWSs would be located on existing concrete surfaces.

29 Long-term, direct, beneficial effects associated with geologic hazards would be expected as a
30 result of implementing the Proposed Action under Alternative 1. The AHAWS would provide a
31 hazard warning system that could be quickly activated and would have continuous coverage over
32 areas potentially affected by geologic hazards including tsunamis that could impact low lying
33 areas of Guam thereby reducing loss of life and injuries.

34 **3.7.5 Alternative 2: No Action Alternative**

35 Under the No Action Alternative, development of the AHAWS would not occur. No impacts
36 associated with geological resources would be expected as the result of implementing the No
37 Action Alternative. However, the opportunity to implement a system to warn the public of
38 geologic hazards, such as tsunamis, that could save lives and reduce injuries would be lost.

39 **3.8 Water Resources**

40 Water resources include groundwater, surface water, and floodplains. Evaluation of water
41 resources examines the quantity and quality of the resource and its demand for various purposes.

1 Groundwater consists of the subsurface hydrologic resources. It is an essential resource often
2 used for potable water consumption, agricultural irrigation, and industrial applications.
3 Groundwater typically can be described in terms of its depth from the surface, aquifer or well
4 capacity, water quality, surrounding geologic composition, and recharge rate.

5 Surface water resources consist of lakes, rivers, streams, and marine water bodies (e.g., bays,
6 harbors, open ocean). Surface water is important for its contributions to the economic,
7 ecological, recreational, and human health of a community or locality. Storm water is an
8 important component of surface water systems because of its potential to introduce sediments
9 and other contaminants that could degrade lakes, rivers, streams, and marine water bodies.
10 Storm water flows, which might be exacerbated by high proportions of impervious surfaces
11 associated with buildings, roads, and parking lots, are important to the management of surface
12 water. Storm water systems convey precipitation away from developed sites to appropriate
13 receiving surface waters. Various systems and devices might be used to slow the movement of
14 water. For instance, a large, sudden flow could scour a streambed and harm biological resources.
15 Storm water systems provide the benefit of reducing sediments and other contaminants that
16 would otherwise flow directly into surface waters. Failure to size storm water systems
17 appropriately to hold or delay conveyance of the largest predicted precipitation event often leads
18 to downstream flooding and the environmental and economic damages associated with flooding.
19 Higher densities of development, such as those found in urban areas, require greater degrees of
20 storm water management because of the higher proportions of impervious surfaces that occur in
21 the areas.

22 Floodplains are areas of low-level ground present along rivers, stream channels, or coastal
23 waters. Floodplains are subject to periodic or infrequent inundation from rainfall. Risk of
24 flooding typically depends on local topography, the frequency of precipitation events, the size of
25 the watershed above the floodplain, and, in the case of coastal flooding, storm surge and tides.
26 Flood potential is evaluated by FEMA, which defines the 100-year floodplain as an area that has
27 a one percent chance of inundation by a flood event in a given year. Certain facilities inherently
28 pose too great a risk to be in the 500-year floodplain (defined as having a 0.2 percent chance of
29 flooding each year), such as hospitals, critical infrastructure, or storage buildings for
30 irreplaceable records. Federal, state, territorial and local regulations often limit floodplain
31 development to passive uses such as recreational and preservation activities to reduce the risks to
32 human health and safety. Guam participates in FEMA's National Flood Insurance Program
33 (NFIP). Thus, Guam has promulgated and enforces a floodplain ordinance at least as stringent as
34 the NFIP and its implementing regulations (44 C.F.R. Parts 59–77).

35 EO 11988, *Floodplain Management* (May 24, 1977), directs agencies to consider alternatives to
36 avoid adverse effects and incompatible development in floodplains. An agency may locate a
37 facility in a floodplain if the head of the agency finds there is no practicable alternative. If it is
38 found there is no practicable alternative, the agency must minimize potential harm to the
39 floodplain, and circulate a notice explaining why the action is to be located in the floodplain
40 prior to taking action. New construction in a floodplain must apply accepted flood proofing and
41 flood protection to include elevating structures above the base flood level rather than filling in
42 land. FEMA's regulations promulgating EO 11988 can be found at 44 CFR Part 9.

1 Jurisdictional wetlands are defined by the U.S. Army Corps of Engineers (USACE) Wetlands
2 Delineation Manual (USACE 1987) as “those areas that are inundated or saturated by surface or
3 groundwater at a frequency and duration sufficient to support, and under normal circumstances
4 do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.”
5 The majority of jurisdictional wetlands (i.e., those wetlands protected by the Clean Water Act
6 [CWA]) meet three criteria: a prevalence of wetland-associated vegetation, hydric (wetland-
7 type) soils, and wetland hydrology.

8 Section 404 of the CWA establishes a Federal program to regulate the discharge of dredge and
9 fill material into waters of the United States. Section 404 permits are issued by the USACE.
10 Waters of the United States include interstate and intrastate lakes, rivers, streams, and wetlands
11 that are used for commerce, recreation, industry, sources of fish, and other purposes. Each
12 agency should consider the impact on water quality from actions such as the discharge of dredge
13 or fill material into waters from construction, or the discharge of pollutants as a result of facility
14 operation. Wetlands are also protected under EO 11990, *Protection of Wetlands* (43 Federal
15 Register [FR] 6030). The purpose of the EO is to reduce adverse impacts associated with the
16 destruction or modification of wetlands. FEMA’s regulations promulgating EO 11990 are
17 combined with regulations promulgating EO 11988 at 44 CFR Part 9.

18 **3.8.2 Existing Conditions**

19 ***Groundwater***

20 The primary aquifer on Guam is the Northern Guam Lens Aquifer (NGLA) that extends from the
21 northernmost tip of the island to where the southern highlands start north of Apra Harbor. The
22 NGLA was designated as a sole-source aquifer in 1978 because it supplies drinking water to
23 approximately 80 percent of the island’s residents. The NGLA is composed of six distinct sub-
24 basins: the Agaña, Mangilao, Andersen, Agafa-Gumas, Finegayan, and Yigo-Tumon. Water
25 levels in the NGLA vary daily and seasonally in response to ocean tides, recharge rates, and
26 groundwater withdrawal. In northern Guam, water is obtained from wells that tap the upper part
27 of a fresh groundwater lens in an aquifer composed mainly of limestone.

28 ***Surface Waters and Floodplains***

29 Sites 1, 2, 4, 6, 7, 8, 10, 11, 13, 14 and 15 are not located in proximity to surface water features
30 and are not within the 100-year floodplain. Sites 3, 5, and 9 are near surface waters and are also
31 located in the 100-year flood plain.

32 Site 3 is located approximately 70 feet south of the Geus River which flow westward into the
33 Philippine Sea. Site 3 is within the 100-year floodplain in Special Flood Hazard Zone VE which
34 includes areas within the coastal flood zone, with velocity hazard (wave action), where the Base
35 Flood Hazard has been determined. The Base Flood Elevation at Site 3 is 12 feet.

36 Site 5 is located in the concrete parking area of the Agat Marina. Site 5 is within the 100-year
37 floodplain in Special Flood Hazard Zone VE which includes areas within the coastal flood zone,
38 with velocity hazard (wave action), where the Base Flood Hazard has been determined. The
39 Base Flood Elevation at Site 5 is 11 feet. There is a jetty adjacent to the south side of the site, a
40 pier to the west and parking and boat slips associate with the marina to the north of the site.

1 Site 9 is located adjacent to an a-frame pavilion associated with a rest stop at the Pago Bay
2 Bridge and Pago Bay River on Route 4. The elevation of the bridge is approximately 20 feet
3 above the Pago River. Site 9 is within the 100-year floodplain in Special Flood Hazard Zone A.
4 The Base Flood Elevation has not been determined for areas within Zone A.

5 Site 12 is approximately 70 feet west of the Asan River just downstream of its confluence with
6 the Calacag River. Site 12 is within the 500-year floodplain where there is a 0.2 percent chance
7 of flooding in a given year, or a one percent chance with average depths of less than one foot.

8 ***Wetlands***

9 None of the AHAWS site locations are within or immediately adjacent to wetlands or other
10 waters of the United States.

11 **3.8.3 Evaluation Criteria**

12 Evaluation criteria for impacts on water resources are based on water availability, quality and
13 use; and associated regulations. The Proposed Action would be adverse if it does one or more of
14 the following:

- 15 • Reduces water availability or supply to existing users
- 16 • Overdrafts groundwater basins
- 17 • Exceeds safe annual yield of water supply sources
- 18 • Affects water quality adversely
- 19 • Endangers public health, safety or property by creating or worsening hazard conditions
- 20 • Threatens or damages unique hydrologic characteristics
- 21 • Violates established laws or regulations adopted to protect water resources or to protect
22 human life and property from flood risks.

23 **3.8.4 Alternative 1: Development of the AHAWS at 15 Locations on Guam**

24 No impacts to groundwater would be expected as a result of implementing the Proposed Action
25 at any of the AHAWS sites. There would be no groundwater extracted at the sites for use during
26 construction or operation of the AHAWS. During construction, erosion and sedimentation and
27 storm water management practices would be implemented and maintained consistent with the
28 Guam EPA, 10 GCA Chapter 47, Water Pollution Control Act. Spill prevention and control
29 measures would be implemented to ensure that impacts to groundwater would not occur during
30 construction activities.

31
32 Short-term, direct, negligible, adverse effects to the Geus River could occur as a result of
33 implementing the Proposed Action under Alternative 1 at Site 3. During construction, erosion
34 and sedimentation and storm water management practices would be implemented and
35 maintained consistent with the Guam EPA, 10 GCA Chapter 47, Water Pollution Control Act to
36 ensure that runoff from the site does not impact water quality or habitat in the Geus River or
37 associated downstream habitats.

38
39 No impacts to the 100-year floodplain would be expected as a result of implementing Alternative
40 1 at Site 3. The AHAWS sites would be approximately 15 feet by 20 feet in dimension and

1 would not be expected to affect the existing boundary of the 100-year floodplain. The site would
2 be unmanned so potential impacts of flooding on individuals associated with operating and
3 maintaining the siren would not be expected. Construction techniques would account for the
4 locations of these sites in the floodplain to reduce the AWAHS vulnerability to flood damage. A
5 notice explaining why the action is located in the 100-year floodplain was circulated in the
6 Mariana Variety newspaper on March 7, 2014. A copy of the notice is included in **Appendix C**.
7 No comments were received. In accordance with EO 11988 and 44 CFR Part 9, FEMA and
8 GHS/OCD would publish a Final Public Notice before implementing the Proposed Action.

9
10 Short-term, indirect, negligible, adverse effects to the Philippine Sea could occur as a result of
11 implementing the Proposed Action under Alternative 1 at Site 5. During construction, erosion
12 and sedimentation and storm water management practices would be implemented and maintained
13 consist with the Guam EPA Guam Soil Erosion and Sediment Control Regulations, 10 GCA
14 Chapter 47, Water Pollution Control Act to ensure that runoff from the site does not impact
15 water quality or habitat in the Philippine Sea.

16
17 No impacts to the 100-year floodplain would be expected as a result of implementing Alternative
18 1 at Site 5. The AHAWS sites would be approximately 15 feet by 20 feet in dimension and
19 would not be expected to affect the existing boundary of the 100-year floodplain. The site would
20 be unmanned so potential impacts of flooding on individuals associated with operating and
21 maintaining the siren would not be expected. Construction techniques would account for the
22 locations of these sites in the floodplain to reduce the AWAHS vulnerability to flood damage. A
23 notice explaining why the action is located in the 100-year floodplain was circulated in the
24 Mariana Variety newspaper on March 7, 2014. A copy of the notice is included in **Appendix C**.
25 No comments were received. In accordance with EO 11988 and 44 CFR Part 9, FEMA and
26 GHS/OCD would publish a Final Public Notice before implementing the Proposed Action.

27
28 Short-term, indirect, negligible, adverse effects to the Pago River could occur as a result of
29 implementing the Proposed Action under Alternative 1 at Site 9. During construction, erosion
30 and sedimentation and storm water management practices would be implemented and maintained
31 consist with the Guam EPA Guam Soil Erosion and Sediment Control Regulations, 10 GCA
32 Chapter 47, Water Pollution Control Act to ensure that runoff from the site does not impact
33 water quality or habitat in the Pago River or associated downstream bay habitats.

34
35 No impacts to the 100-year floodplain would be expected as a result of implementing Alternative
36 1 at Site 9. The AHAWS sites would be located on the existing Pago Bay Bridge and associated
37 infrastructure. Development of the AHAWS at site 9 would not affect the existing boundary of
38 the 100-year floodplain. The site would be unmanned so potential impacts of flooding on
39 individuals associated with operating and maintaining the siren would not be expected.
40 Construction techniques would account for the locations of these sites in the floodplain to reduce
41 the AWAHS vulnerability to flood damage. A notice explaining why the action is located in the
42 100-year floodplain was circulated in the Mariana Variety newspaper on March 7, 2014. A copy
43 of the notice is included in **Appendix C**. No comments were received. In accordance with EO
44 11988 and 44 CFR Part 9, FEMA and GHS/OCD would publish a Final Public Notice before
45 implementing the Proposed Action.

1 Short-term, indirect, negligible, adverse effects to the Asan River could occur as a result of
2 implementing the Proposed Action under Alternative 1 at Site 12. During construction, erosion
3 and sedimentation and storm water management practices would be implemented and maintained
4 consist with the Guam EPA Guam Soil Erosion and Sediment Control Regulations, 10 GCA
5 Chapter 47, Water Pollution Control Act to ensure that runoff from the site does not impact
6 water quality or habitat in the Asan River or associated downstream bay habitats.

7
8 No impacts to the 500-year floodplain would be expected as a result of implementing Alternative
9 1 at Site 12. The AHAWS sites would be approximately 15 feet by 20 feet in dimension and
10 would not be expected to affect the existing boundary of the 500- or 100-year floodplain. The
11 site would be unmanned so potential impacts of flooding on individuals associated with
12 operating and maintaining the siren would not be expected. Construction techniques would
13 account for the locations of these sites in the floodplain to reduce the AWASHS vulnerability to
14 flood damage. A notice explaining why the action is located in the floodplain was circulated in
15 the Mariana Variety newspaper on March 7, 2014. A copy of the notice is included in **Appendix**
16 **C**. No comments were received. In accordance with EO 11988 and 44 CFR Part 9, FEMA and
17 GHS/OCD would publish a Final Public Notice before implementing the Proposed Action.

18
19 No impacts to water resources or water quality would be expected throughout the construction
20 phase and maintenance and operation of the AHAWS at sites 1, 2, 4, 6, 7, 8, 10, 11, 13, 14, 15.
21 There are no surface water features in proximity to these sites. During construction, erosion and
22 sediment control and storm water BMPs would be implemented consistent with the Guam EPA
23 Guam Soil Erosion and Sediment Control Regulations, 10 GCA Chapter 47, Water Pollution
24 Control Act. Additional BMPs that could be implemented, as appropriate, are presented in
25 **Section 5.0**.

26
27 In compliance with EO 11988 and 44 CFR Part 9, FEMA considered the Proposed Action's
28 impacts to the floodplain. FEMA applies the Eight-Step Decision-Making Process to ensure that
29 it provides Federal financial assistance for projects consistent with EO 11988. The NEPA
30 compliance process involves the same basic decision-making process to meet its objectives as
31 the Eight-Step Decision-Making Process. Therefore, the Eight-Step Decision-Making Process
32 has been integrated into the NEPA process. The nature of the Proposed Action (i.e., providing
33 an AHAWS that warns for tsunamis) requires that some siren locations may be in the floodplain.
34 As explained in Chapter 2, the site selection criteria are very specific. Therefore, no practicable
35 alternatives are available to locating Sites 3, 5, 9, and 12 in the floodplain. As described above
36 for each of these sites, GHS/OCD would implement construction techniques to minimize impacts
37 from siting the AHAWS in the floodplain at these locations. GHS/OCD will obtain any
38 necessary building permits from the Guam Department of Public Works who is responsible for
39 administering Guam's floodplain ordinance.

40 No impacts to wetlands would be expected as a result of developing any of the AHAWS sites.
41 There are no wetlands in proximity to the sites. No further review in compliance with EO 11990
42 is required.

1 **3.8.5 Alternative 2: No Action Alternative**

2 Under the No Action Alternative, development of the AHAWS would not occur. No impacts
3 associated with water resources would be expected as the result of implementing the No Action
4 Alternative.

5 **3.9 Biological Resources**

6 **3.9.1 Definition of the Resource**

7 Biological resources include wildlife (fauna), vegetation (flora), and the ecosystems in which
8 these resources occur. Specific concerns relating to biological resources consist of declines in
9 species diversity and impacts on threatened or endangered species.

10 Sensitive and protected biological resources include federally listed (endangered or threatened),
11 proposed, and candidate species, and designated or proposed critical habitat; species of concern
12 managed under Conservation Agreements or Management Plans; and territorially listed species.

13 The ESA (16 United States Code [U.S.C.] 1531 et seq.); specifically charges Federal agencies
14 with the responsibility of using their authority to conserve threatened and endangered species.
15 All Federal agencies must ensure an action they authorize, fund, or carry out is not likely to
16 jeopardize the continued existence of a threatened or endangered species or result in the
17 destruction of critical habitat for these species, unless the agency has been granted an exception.
18 The Secretary of the Interior, using the best available scientific data, determines which species
19 are officially threatened or endangered. Guam maintains a list of threatened and endangered
20 species pursuant to the Endangered Species Act of Guam of 1982 (Guam Public Law [G.P.L].
21 15-36). The Endangered Species Act of Guam protects both locally and federally listed species
22 on Guam.

23 The Migratory Bird Treaty Act (MBTA) makes it illegal for anyone to take, possess, import,
24 export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird,
25 or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant
26 to Federal regulations. The migratory bird species protected by the Act are listed in 50 CFR
27 10.13.

28 **3.9.2 Existing Conditions**

29 *Vegetation*

30 Much of northern Guam, where it is undeveloped, is characterized by native, secondary growth
31 limestone forest with patches of old growth forest remaining in some areas while the disturbed
32 urban areas are generally comprised of a mixture of both native and non-native plant species.
33 The southern portion of the Guam is characterized by both native and non-native plant species in
34 disturbed and developed areas, while most of the undeveloped lands are characterized by
35 savannah grasslands. Coastal strand vegetation communities occur in the coastal plain.
36 Secondary limestone forest occurs in areas that historically have been cleared of mature growth
37 and are returning to the climax of successional stage growth. The AHAWS sites are located
38 throughout the central and southern portion of Guam.

1 Noxious nonnative plant species have become established throughout the island and are
2 displacing native plant species. Invasive nonnative species are characterized by rapid growth
3 and rapid seed production. Tangantangan (*Leucaena leucocephala*) is an introduced legume that
4 was used for reforestation after World War II and has spread throughout Guam, displacing native
5 species that colonize limestone soils.

6 The vegetation surrounding Site 1 is characterized by mowed grasses including foxtails (*Setaria*
7 spp.). Vegetation in the areas surrounding the site is characterized by savannah grassland with a
8 few coconut (*Cocos nucifera*) trees, monkey-pod (*Pithecellobium saman*), ironwood (*Casuarina*
9 *equisetifolia*), da'ok (*Calophyllum inophyllum*), mango (*Mangifera indica*) and various sedge
10 species. There is an Acacia (*Acacia confusa*) forest stand approximately 500 yards to the north
11 of the site.

12 The vegetation at Site 2 is characterized by mowed maintained grasses. There is a stand of
13 tangantangan to the east of the site and a few ironwood, plumeria (*Plumeria* sp.), coconut, cycad
14 (*Cycad* sp.), and introduced non-native species including pink tecoma (*Tabebuia heterophylla*)
15 planted as landscape species around the parking areas. Chain of love vine (*Antigonon leptopus*)
16 is common in scrub areas adjacent to the site.

17 The vegetation at Site 3 is characterized by mowed maintained grasses and other herbaceous
18 species such as beggars tick (*Bidens alba*) and asthma weed (*Chamaesyce hirta*). Forested
19 habitat to the west of the site is characterized by tangantangan with some coconut, mangos, and
20 other palms.

21 The vegetation at Site 4 is characterized by mowed grasses and other herbaceous species
22 including beggars tick, asthma weed, false verbena (*Verbena* sp.), morning glory (*Ipomoea* sp.)
23 and several sedge species.

24 Site 5 is located in a parking lot area associated with the Agat Marina. There is no vegetation in
25 close proximity to the site. Vegetation in landscaped areas around the marina includes pago
26 (*Hibiscus tiliaceus*), fish-kill tree (*Barringtonia asiatica*), coconuts and other introduced non-
27 native landscape plant species.

28 The vegetation at Site 6 is characterized by mowed maintained grasses. There is a large
29 ironwood approximately 30 feet north of the siren location. Tangantangan, ironwood, monkey
30 pods, coconut, and Bougainvillia (*Bougainvillea* sp.) occur along a concrete channelized drainage
31 approximately 80 feet the south of the siren site.

32 The vegetation at Site 7 is characterized by mowed maintained grasses. There is an area of
33 tangantangan scrub bordering a road to the south of the site. There are sparse monkey pods,
34 mapunao (*Aglaia mariannensis*), coconut and other palms planted in the field associated with the
35 Talofoto Elementary School. None of the trees are in close proximity to the proposed siren site.

36 The vegetation at Site 8 is characterized by mowed maintained grass. There are some papaya,
37 plumeria, pandanus (*Pandanus fragrans*), coconut and other palms planted in adjacent business
38 and neighborhood areas.

1 The vegetation at Site 9 is characterized by mowed maintained grass within a concrete frame.
2 Vegetation in the park area and along the Pago River adjacent to the site is characterized by
3 mowed grasses, tangantangan, pago, Bouganvillia, Nypa palms (*Nypa fruiticans*) and various
4 vines species.

5 The vegetation at Site 10 is characterized by various grass species. Vegetation in proximity to
6 the site includes tangantangan, seeded breadfruit (*Artocarpus mariannensis*), banana (*Musa* sp.),
7 flame tree (*Delonix regia*), mango, banyan (*Ficus prolixa*) and various other planted tree species.

8 There is no vegetation at Site 11. The proposed siren site is located on the roof of the Guam Port
9 Authority Administrative building.

10 The vegetation at Site 12 is characterized by mowed maintained grass around a concrete pad.
11 The proposed siren location is on the concrete pad. Vegetation in the area around the site
12 includes coconut, bamboo (*Bambusa vulgaris*), pago, ironwood, and papaya. Some of the vines
13 and herbaceous vegetation in proximity to the site include beggars tick, morning glory, beach
14 sunflower (*Wedilia biflora*), and kang kung (*Ipomoea aquatica*).

15 The vegetation at Site 13 is characterized by mowed maintained grasses with a lemon (*Citrus*
16 sp.) tree and a few eba (*Phyllanthus acidus*) trees planted along the fence around the adjacent
17 tennis courts. Adjacent to the site is a da'ok and other ornamental landscape plant species. The
18 grass at the site is characterized by zoysia grass (*Zoysia* spp.).

19 The vegetation at Site 14 is characterized by mowed maintained grasses and beggars tick
20 associated with the JFK High School athletic field. Tangantangan scrub occurs outside and
21 along the fence surrounding the athletic field.

22 The vegetation at Site 15 is characterized by various grasses and other herbaceous species
23 including fox tail, guinea grass (*Panicum maximum*) and beggars tick. Wooded areas to the
24 south and east of the site are characterized by tangantangan, coconut, pago, flame tree and
25 various vine species.

26 **Wildlife**

27 Guam hosts a variety of rare reptiles, including the island gecko (*Gehyra oceanic*), Pacific
28 slender-toed gecko (*Nactus pelagicus*), and Micronesian gecko (*Perochirus ateles*). The Slevin's
29 skink (*Emoia slevinis*) and moth skink (*Lipinia noctua*) also might occur in rural areas. The
30 endemic tree snail (*Partula salifana* or *P. gibba*) and land snails have historically occurred
31 throughout the island.

32 Limestone forests on northern Guam, much like those of other Mariana Islands, were heavily
33 cleared for the construction of military installations during World War II. The accidental
34 introduction of the brown treesnake (*Boiga irregularis*) around this same period subsequently
35 accelerated the disappearance of Guam's native avifauna and other endemic terrestrial
36 vertebrates, and with them, seed dispersal, pollination, and the predatory regulation of
37 herbivorous insects (Hess and Pratt 2006).

1 Attributes of island wildlife include small geographic ranges and population size, low
 2 reproductive rates, and lack of the ability to coevolve with invasive species and disturbed
 3 habitats. Islands typically have lower numbers of species than mainland areas which results in
 4 less predators and competitors that could prohibit the establishment of invasive species. These
 5 limitations have caused exotic and invasive species to replace native island species (Wiles et al.
 6 2003). Therefore, island animals have no defensive behaviors when exposed to introduced
 7 predators, like the brown treesnake.

8 Extirpations of forest avifauna inhabiting southern Guam by the brown treesnake were
 9 completed 27 to 32 years from the time snakes were introduced to the island. In northern Guam
 10 (91.5 square miles), which is similar in size to southern Guam (117 square miles), extirpations of
 11 10 species with healthy populations took only 11 years from the time of snake introduction
 12 (Wiles et al. 2003). Monitor lizards (*Varanus indicus*), also an introduced species, inhabit
 13 forested areas and forage on both native and nonnative birds, bird eggs, lizards, insects, and
 14 crabs. Introduced feral ungulates, like the Philippine deer (*Cervus mariannus*) and pigs (*Sus*
 15 *scrofa*), have altered the island’s natural ecosystems. Feral ungulates impact native vegetation
 16 by grazing and rooting, which (1) kills or clears vegetation, (2) prevents native vegetation
 17 recolonization, (3) spreads the seeds of introduced plant species, and (4) disturbs soils. Three
 18 introduced rat species (*Rattus norvegicus*, *R. rattus*, and *R. exulans*) also inhabit Guam. Along
 19 with feral dogs and cats, these species prey on local birds and their eggs, resulting in decimated
 20 native bird populations. Introduced birds, such as black drongos (*Dicrurus macrocercus*) and
 21 black francolins (*Francolinus francolinus*) are aggressive birds that also inhabit Guam and might
 22 be impacting the nesting success of native forest birds. **Table 3-4** lists the introduced wildlife
 23 that pose a threat to Guam’s native ecosystems.

24 **Table 3-4. List of Common Introduced Wildlife Species on Guam**

Species Name	Common Name
<i>Boiga irregularis</i>	brown treesnake
<i>Cervus mariannus</i>	Philippine deer
<i>Dicrurus macrocercus</i>	black drongo
<i>Felis domesticus</i>	feral cat
<i>Francolinus francolinus</i>	black francolin
<i>Rattus norvegicus</i>	Norway rat
<i>Rattus rattus</i>	black rat
<i>Rattus exulans</i>	Pacific rat
<i>Sus scrofa</i>	feral pig
<i>Varanus indicus</i>	monitor lizard

1

2 ***Protected Species and Habitat***

3 The Government of Guam, Department of Agriculture's Endangered Species Regulation No. 8
4 (2003), lists three Guam endangered tree species: tsatsa (*Cyathea lunulata*), hayun lago
5 (*Serianthes nelsonii*), and ufa halomtano (*Heritiera longipetiolata*). The hayun lago is federally
6 listed as endangered. Based upon public comment, the USFWS reexamined the basis of
7 recognition of *Tabernaemontana rotensis* as a distinct endemic species on Rota and Guam. On
8 April 8, 2005 it was accepted that an authoritative monographic work on the widespread species
9 *Tabernaemontana pandacaqui* concluded that *Tabernaemontana rotensis* is *T. pandacaqui* (69
10 *Federal Register* No. 68, pp. 18499–18507, April 8, 2004; USFWS 2004). However, on Guam
11 *T. rotensis* is considered an important species.

12 There are areas on Guam where there are suitable conditions to support the federally threatened
13 Mariana fruit bat (*Pteropus mariannus mariannus*), and the federally endangered Mariana crow
14 (*Corvus kubaryi*), Mariana gray swiftlet (*Aerodramus vanikorensis bartschi*) and Mariana
15 common moorhen (*Gallinula chloropus guami*). There are turtle nesting areas on Guam where
16 the federally threatened green sea turtle (*Chelonia mydas*), and federally endangered hawksbill
17 sea turtle (*Eretmochelys imbricata*) return to lay their eggs. The federally endangered Guam rail
18 (*Rallus owstonii*) and Guam kingfisher (*Todiramphus cinnamominus cinnamominus*), an island
19 endemic subspecies of the regionally endemic Micronesian kingfisher, are extirpated in the wild
20 from Guam, but captive-bred rails have been reintroduced (AAFB 2003). There is currently a
21 reintroduced population of rails on Cocos Island off the southern tip of Guam.

22 Bats utilize limestone and coastal forest and coconut plantations for foraging and roosting.
23 Crows were known to use secondary, coastal, ravine, and agricultural forests, including coconut
24 plantations on Andersen Air Force Base for foraging and nesting. The native forest located in
25 the area between Pati Point and Tarague on the northern end of Guam is some of the best
26 forested habitat remaining on Guam. It is important to the survival and recovery of the bat,
27 crow, kingfisher, and rail and is the last known area where wild crows were detected on the
28 island. The area is over nine miles to the northeast of Site 15. Mariana gray swiftlets occur in
29 association with three caves on the Naval Base Guam, Naval Munitions Site. The locations of
30 the caves are not published, but are in south central Guam and are expected to be at least three
31 miles from any of the proposed AHAWS locations.

32 The Mariana common moorhen typically occurs in freshwater to slightly brackish wetland
33 habitats, including ponds, marshes, and slow-moving rivers (Baker 1951). More recently it has
34 made use of man-made wetlands including taro patches, water treatment ponds, commercial
35 fishponds, golf course ponds, and reservoirs. The key wetland features for suitable moorhen
36 habitat consists of substantial emergent wetland vegetation, with equal parts open water and
37 cover, in a wetland deeper than 24 inches (USFWS 1991). The presence of vegetative cover
38 around the wetland is also important in providing escape routes and visual barriers between
39 moorhens and predators or human activity (Baker 1951). Some observations indicate that
40 moorhens concentrate in permanent wetland habitats during the dry season as seasonal wetlands
41 dry up and disperse again as seasonal wetlands flood in the wet season (USFWS 1991, Takano
42 and Haig 2004).

1 Green sea turtles and hawksbill sea turtles have been documented to nest in the Tarague Beach
2 area (Ritidian point to Andersen Air Force Base Explosive Ordnance Disposal (EOD) area)
3 between February and August. Hatching of green sea turtles has been reported between May and
4 September. Hawksbill sea turtles have also been documented in the area in June and July
5 (USFWS 2008). Green sea turtles are also documented to nest at Cocos Island, off the southern
6 tip of Guam.

7 According to the correspondence letter from USFWS dated December 05, 2013 there is no
8 proposed or critical habitat within any of the AHAWS project sites (see **Appendix C**).

9 The Guam Micronesian starling or sãli (*Aplonis opaca guami*), is a Guam endangered species
10 that was nearly extirpated in the early 1990s; however, it currently appears to be making a
11 modest recovery and occurs in small numbers on Andersen Air Force Base, Cocos Island, parts
12 of Hagatña, Apra Harbor, and some coastal areas in southern Guam (U.S. Navy 2009). The
13 starlings use scrub, secondary growth, mixed woodland, and mature forest for habitat and feed
14 primarily on the fruit and seeds of ripe papayas (Baker 1951, Jenkins 1983). They can occur in
15 urban areas but are generally more abundant in forested areas (Jenkins 1983). Nesting has been
16 observed from January through June. Starlings are cavity nesters and have been found nesting in
17 the cavities of trees and rocky cliffs. At one time, Micronesian starling were found throughout
18 Guam but predation by brown tree snake has restricted them primarily to Cocos Island, Naval
19 base Guam Apra Harbor in buildings, Andersen Air Force Base, parts of Hägatña and certain
20 coastal areas in the south of Guam.

21 ***Magnuson-Stevens Fishery Conservation and Management Act of 1976***

22 The Magnuson-Stevens Fishery Conservation and Management Act of 1976 as amended(MSA)
23 (16 U.S.C. 1801 et seq.) provides for the conservation and management of sustainable fisheries
24 within U.S. coastal waters. In 1996, the MSA was amended to require the identification and
25 management of Essential Fish Habitat (EFH) for managed species (16 U.S.C. §305[b]). EFH is
26 defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or
27 growth to maturity.” For Guam, EFH has been designated for bottomfish. The EFH extends
28 from the shore out to 400 meters depth around the entire coastline of Guam.

29 ***EO 13112: Invasive Species***

30
31 EO 13112, Invasive Species of 1999, requires Federal agencies to prevent the introduction of
32 invasive species; provide for their control; and minimize the economic, ecological, and human
33 health impacts that invasive species cause. EO 13112 requires that Federal agencies not
34 authorize, fund, or implement actions that are likely to introduce or spread invasive species
35 unless the agency has determined that the benefits of the action(s) outweigh the potential harm
36 caused by invasive species and that all feasible and prudent measures to minimize harm caused
37 by invasive species will be implemented in conjunction with the action(s).

38 ***EO 13089: Coral Reef Protection***

39
40 EO 13089 requires Federal agencies to ensure that actions they authorize, fund, or implement
41 will not degrade the conditions of coral reef ecosystems. In and around Guam, coral reefs occur

1 inside many bays, form the opening to many bays, and occur as fringing reefs further offshore.
2 Natural phenomena such as typhoons and disease have always taken their toll on reefs, but their
3 effects are exacerbated by human activities in the ocean and on land. Besides destructive fishing
4 and scuba diving practices and coral harvesting, impacts result from sediments eroded from
5 agricultural and construction operations, sewage, effluents from industrial facilities, and
6 introduction of invasive marine species.

7 **3.9.3 Evaluation Criteria**

8 The level of impact on biological resources is based on (1) the importance (i.e., legal,
9 commercial, recreational, ecological, or scientific) of the resource, (2) the proportion of the
10 resource that would be affected relative to its occurrence in the region, (3) the sensitivity of the
11 resource to the proposed activities, and (4) the duration of ecological ramifications.

12 Effects on biological resources are adverse if species or habitats of high concern are negatively
13 affected over relatively large areas. Effects are also considered adverse if disturbances cause
14 reductions in population size or distribution of a species of high concern. Other adverse effects
15 result from performing activities that violate other biological laws or requirements (e.g., MBTA,
16 MSA, EO 13112, EO 13089).

17 As a requirement under the ESA, Federal agencies must avoid jeopardizing the continued
18 existence of threatened or endangered species and destruction or modification of critical habitat.
19 The ESA requires that Federal agencies, state/territorial/local government, corporations, and
20 individuals avoid “taking” threatened or endangered wildlife species. Section 7 of the ESA
21 establishes a consultation process between Federal action agencies and the USFWS or NMFS
22 that ends with USFWS or NMFS concurrence of a “not likely to adverse effect” determination, a
23 biological opinion that the project will not jeopardize the continued existence of species or
24 destroy/modify critical habitat, or a biological opinion that the project will result in jeopardy or
25 adverse destruction/modification. If it is determined that a project may affect federally listed
26 species or critical habitat then the Federal agency must initiate consultation with USFWS or
27 NMFS. If the Federal action agency determines a project will have no effect on federally listed
28 species and/or critical habitat, then no coordination or consultation with USFWS or NMFS is
29 required.

30 **3.9.4 Alternative 1: Development of the AHAWS at 15 Locations on Guam**

31 Long-term, direct and indirect, negligible, adverse effects to vegetation would be expected as a
32 result of implementing Alternative 1 at the AHAWS sites. Long-term, direct effects to
33 vegetation would be expected as a result of removal within the project footprint. Most of the
34 vegetation that would be removed is characterized as mowed and maintained grasses. Long-
35 term, indirect effects to vegetation outside of the project footprint could occur as a result of
36 damage to root systems, or collision by construction equipment. Tree species in close proximity
37 to the project footprint would be protected by construction fencing or other methods to minimize
38 potential for impacts.

39 Short-term and long-term, direct and indirect, negligible, adverse effects to wildlife would be
40 expected as a result of implementing Alternative 1 at the AHAWS sites. Short-term, indirect
41 effects to wildlife would be expected as a result of increased activity and noise during

1 construction. This activity could result in displacement of wildlife species that use the area.
2 Many of the wildlife species would be expected to return to the area following completion of
3 construction activities. Long-term, direct impacts would be expected to occur as a result of
4 mortality of less mobile species that are unable to move from the pathway of equipment during
5 construction. Efforts would be made to allow wildlife to clear the paths of construction
6 equipment. All construction activities would be conducted during daylight hours and any
7 associated lighting would be directed away from the shoreline to minimize disturbance of
8 wildlife species. If active bird nests are found in close proximity to the project site during
9 construction activities, actions will be taken to avoid adverse effects to the nest in compliance
10 with the MBTA.

11 No effect to federally listed species or their habitat would be expected. Vegetation at the
12 AHAWS sites is primarily mowed maintained grasses. Site 5, 11 and 12 are currently
13 characterized as pavement, or are developed. There is no suitable foraging or roosting habitat in
14 proximity to the AHAWS sites for the Mariana fruit bat or Mariana crow and the sites are not in
15 proximity to any of the known Mariana gray swiftlet roosting caves. There is no suitable habitat
16 for the Mariana moorhen in close proximity to any of the AHAWS sites. None of the proposed
17 sites are in proximity to known or suitable green or hawksbill sea turtle nesting habitat areas.

18 No effect to Guam Micronesian starlings would be expected as a result of implementing Alternative
19 1 at the AHAWS sites. Based on correspondence with the Guam DAWR, and site visits
20 conducted by the agency in November 2013 (see **Appendix C**), the Guam Micronesian starling
21 could occur in proximity to sites 1, 2 and 3. No Micronesian starlings were observed by the
22 agency during site visits and none were observed during site visits for this EA. If Micronesian
23 starlings were observed at any of the AHAWS sites during construction, the Guam DAWR would
24 be notified to determine appropriate steps to avoid any impacts to the bird.

25 No effect to EFH would be expected as a result of implementing the Alternative 1 at the
26 AHAWS sites. None of the AHAWS sites are located within the water. Sites 3, 9 and 12 are
27 located in proximity to rivers that flow into coastal waters and Site 5 is on concrete surfaces
28 associated with the Agat Marina. The remainder of the sites are not in proximity to surface water
29 features. At all sites, erosion and sediment control and storm water best management practices
30 consistent with the requirements of the Guam EPA, 10 GCA Chapter 47, Water Pollution
31 Control Act would be implemented to ensure that runoff from the sites did not impact water
32 quality or habitat in adjacent water bodies or in associated downstream habitats including EFH
33 for bottomfish associated with coastal Guam.

34 Implementing the Proposed Action would similarly have no effect to coral reefs. At all sites,
35 erosion and sediment control and storm water best management practices consistent with the
36 requirements of the Guam EPA, 10 GCA Chapter 47, Water Pollution Control Act would be
37 implemented to ensure that runoff from the sites did not impact water quality which could
38 indirectly affect coral reefs. In addition, coral would not be a component of fill or used in any
39 concrete mix unless from a permitted source.

40 Implementing the Proposed Action would result in a beneficial impact by removing invasive
41 species at any sites where they currently grow. After construction is complete, any revegetation
42 efforts would not include planting invasive species. In addition, areas subject to disturbance as a

1 result of the Proposed Action would be maintained to avoid the spread of invasive species.

2 **3.9.5 Alternative 2: No Action Alternative**

3 Under the No Action Alternative, development of the AHAWS would not occur. No impacts
4 associated with biological resources or habitats would be expected as the result of implementing
5 the No Action Alternative.

6 **3.10 Visual Resources**

7 **3.10.1 Definition of the Resource**

8 Visual resources include the characteristics of an area such as landforms, vegetation, surface
9 water features, and cultural characteristics including buildings and other features resulting from
10 human activities, that give the landscape its visually aesthetic character. These features form the
11 overall visual character of an area. The existing visual character is used as the point of reference
12 to assess whether an activity or project would have impacts on visual resources. Visual
13 resources also have a social setting, which includes public expectations, values, goals, awareness
14 and concern regarding visual quality.

15 **3.10.2 Existing Conditions**

16 Site 1 is characterized primarily as agricultural land in association with the UOG Inarajan/ Ija
17 Experiment Station. The visual resources at and surrounding the site are characterized by
18 undeveloped savannah grassland and fallow agricultural fields, some of which are fenced.

19 Site 2 is on a grassed island within a parking lot for the Inarajan Elementary School. There are
20 power line poles and light poles associated with the school and adjacent roads associated with a
21 residential neighborhood.

22 Site 3 is adjacent to a GWA pump station on Route 4. There are power line poles and light poles
23 associated with Route 4 and the residential neighborhood adjacent to the proposed AHAWS site.

24 Site 4 is characterized by park land associated with Fort Soledad. There are power line poles
25 associated with Route 4, and power line poles and light poles associated with the park entrance
26 road adjacent to the site. There is also a communication tower just to the north of the proposed
27 AHAWS site.

28 Site 5 is within the Agat Marina adjacent to the Guam Fire and Rescue Facility. There are power
29 line poles and light poles associated with the marina and Route 4 which are immediately adjacent
30 to the proposed AHAWS site.

31 Site 6 is adjacent to the Agat Senior Citizen Center. There are power line poles immediately
32 adjacent to the proposed AHAWS site.

33 Site 7 is in the southeastern corner of an open mowed and maintained grass field associated with
34 the Talofof Elementary School. There are power line poles associated with roads that border
35 the site on two sides and there is a community gymnasium to the south and east of the site.

1 Site 8 is in an urban area associated with the Yona Mayor's Office. The area around the
2 proposed AHAWS location is a community resource area associated with the mayor's office, a
3 library, community center and day care center. There are power line poles and light poles
4 associated with the development that surrounds the proposed AHAWS site.

5 Site 9 is at the Pago Bay Bridge immediately adjacent to Route 4. There are light poles and
6 power line poles immediately adjacent to the proposed AHAWS site.

7 Site 10 is at the Guam Homeland Security office located within the Governors Complex. There
8 are light poles and power line poles associated with the facility immediately adjacent to the
9 proposed AHAWS site.

10 Site 11 is within an industrial area associated with the Guam commercial port facility. The
11 proposed AHAWS site is on the roof of the administration building and is surrounded by cranes
12 and other facilities associated with the port.

13 Site 12 is within a community resource area and community center associated with the Asan
14 Mayor's Office. There are power and light poles associated with Route 1, the mayor's office and
15 the community that surrounds the proposed AHAWS site.

16 Site 13 is adjacent to the Tamuning Mayor's Office. The area surrounding the proposed
17 AHAWS site is highly developed with businesses. The Guam Premier Outlets are to the north of
18 the site; tennis courts and businesses are to the south; restaurants and other businesses are to the
19 east; and the Mayor's office, community center and businesses are to the west.

20 Site 14 is in the northwest corner of the athletic field for JFK High School. There are light poles
21 associated with the athletic field immediately adjacent to the proposed AHAWS site.

22 Site 15 is adjacent to Gun Beach Road and an unnamed road to Ohana Oceanview
23 Condominiums, across from the entrance to the Nikko Hotel in Tumon. There is an existing
24 power pole immediately adjacent to the proposed AHAWS site and others along the roads that
25 border the site.

26 **3.10.3 Evaluation Criteria**

27 A comparative methodology is used to determine potential impacts on visual resources. The
28 visual characteristics of the existing conditions at a location are examined and compared to the
29 expected character of the sites following implementation of an action and the effect of the action
30 on the surrounding view shed and receptors within that view shed. Four areas of potential visual
31 effects are evaluated including:

- 32 • Effects on the existing scenic vista
- 33 • Impacts to scenic resources, including, but not limited to, trees, rock outcroppings, and
34 historic buildings or other structures
- 35 • Degradation of existing visual character or quality of a site and its surroundings
- 36 • Creation of a new source of substantial light or glare that would adversely affect day or
37 nighttime views in the area.

1 **3.10.4 Alternative 1: Development of the AHAWS at 15 Locations on Guam**

2 No impacts to visual resources would be expected at any of the proposed AHAWS sites under
3 Alternative 1. Site 1 is in an area that is characterized by undeveloped savannah grassland and
4 fallow agricultural fields. There are no visual receptors (occupied houses or other structures) in
5 the immediate vicinity of the proposed AHAWS site. The rolling character of the landscape
6 limits view of the tower from the surrounding areas for any extended distance in all directions.
7 The proposed AHAWS locations at the remaining sites are in areas where there are numerous
8 existing power poles, light poles and other structures in immediate proximity of the proposed
9 sites. Placement of the AHAWS facilities at these locations would not be expected to have any
10 impacts on the existing visual resources.

11 **3.10.5 Alternative 2: No Action Alternative**

12 Under the No Action Alternative, development of the AHAWS would not occur and current
13 visual resources would not change. No impacts to visual resources would be expected as the
14 result of implementing the No Action Alternative.

15 **3.11 Cultural Resources**

16 **3.11.1 Definition of the Resource**

17 Cultural resources are defined by the NHPA as prehistoric and historic sites, structures, districts,
18 or any other physical evidence of human activity considered important to a culture, a subculture,
19 or a community for scientific, traditional, religious, or any other reason. Depending on the
20 condition and historic use, such resources can provide insight into living conditions in previous
21 civilizations and can retain cultural and religious significance to modern groups.

22 Typically, cultural resources are subdivided into *archaeological properties* (prehistoric or
23 historic sites where human activity has left physical evidence of that activity, but no structures
24 remain standing) or *architectural properties* (buildings or other structures or groups of structures
25 that are of historic or aesthetic significance). Archaeological properties comprise areas where
26 human activity has measurably altered the earth or deposits of physical remains or material
27 culture are found.

28 Architectural properties include standing buildings, bridges, dams, and other structures of
29 historic or aesthetic significance. Generally, cultural resources must be more than 50 years old
30 to be considered for the National Register of Historic Places (NRHP). More recent structures,
31 such as Cold War-era resources, might warrant protection if they have the potential to gain
32 significance in the future or if they meet “exceptional” significance criteria.

33 *Traditional cultural properties* or *sacred sites* can include archaeological properties, structures,
34 neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that
35 Pacific Islanders or other groups consider essential for the preservation of traditional culture.

36 The evaluation and consultation processes proscribed in Section 106 of the NHPA requires the
37 Federal action agency to conduct an assessment of the potential impact of an undertaking on
38 historic properties that are within the proposed project’s Area of Potential Effect (APE), which is
39 defined as the geographic area(s) “within which an undertaking may directly or indirectly cause

1 alterations in the character or use of historic properties, if any such properties exist.” In
2 accordance with EO 12372, *Intergovernmental Review of Federal Programs*, determinations
3 regarding the potential effects of an undertaking on historic properties are presented to the
4 GHPO.

5 **3.11.2 Existing Conditions**

6 As a consultant to GHS/OCD, Mr. Vic April, who meets the Secretary of the Interior’s Standards
7 for Archaeology, conducted archival research and pedestrian surveys of all 15 AHAWS sites.
8 No historic properties were identified within the APE for any of the 15 AWAHS sites.
9 **Appendix C** provides details regarding the results of the identification process.

10 **3.11.3 Evaluation Criteria**

11 There are three types of effects when considering historic properties. These include “No historic
12 properties affected,” which applies when there are no historic properties present or there are
13 historic properties present but the undertaking will have no effect upon them; “No adverse
14 effect,” which means that there is a direct or indirect effect to a historic property, but the effect
15 does not diminish the qualities that make the property significant; and “Adverse effect,” which
16 “is found when an undertaking may alter, directly or indirectly, any of the characteristics of a
17 historic property that qualify the property for inclusion in the National Register in a manner that
18 would diminish the integrity of the property’s location, design, setting, materials, workmanship,
19 feeling, and association” (36 CFR 800.5(a)(1)).

20 Analysis of potential impacts on cultural resources considers various impacts. Adverse impacts
21 can include physically altering, damaging, or destroying all or part of a resource; altering
22 characteristics of the surrounding environment that contribute to the resource’s significance;
23 introducing visual or audible elements that are out of character with the property or alter its
24 setting; neglecting the resource to the extent that it deteriorates or is destroyed; or the sell,
25 transfer, or lease of the property out of agency ownership (or control) without adequate legally
26 enforceable restrictions or conditions to ensure preservation of the property’s historic
27 significance.

28 **3.11.4 Alternative 1: Development of the AHAWS at 15 Locations on Guam**

29 Based on the archaeological identification and evaluation performed by Mr. April, FEMA made
30 a determination of “no historic properties affected” and requested GHPO concurrence by letter of
31 January 6, 2014. By letter of January 29, 2014, GHPO concurred with FEMA’s determination
32 for all AWAHS sites except for Sites 5, 6, 9, and 15. At GHPO’s recommendation, FEMA made
33 a determination of “no adverse effect” for activities at Sites 5, 6, 9, and 15 with implementation
34 of an Archaeological Subsurface Testing and Recovery Plan on March 4, 2014. GHPO
35 concurred with this determination March 24, 2014. Copies of all correspondence are provided in
36 **Appendix C**.

37 GHS/OCD would implement the Archaeological Subsurface Testing and Recovery Plan for
38 construction activities at Sites 5, 6, 9, and 15. Although low, the potential to discover
39 unexpected subsurface historic properties exists at the other sites as well. Therefore, GHS/OCD
40 would be responsible for halting work in the event of an unanticipated discovery during
41 construction and notifying FEMA as soon as practicable. If FEMA determines that the discovery

1 has the potential to be a significant historic property, FEMA would require GHS/OCD to stop all
2 construction in the vicinity of the discovery and to take all reasonable measures to avoid or
3 minimize harm to the property until FEMA concludes consultation with GHPO.

4 **3.11.5 Alternative 2: No Action Alternative**

5 Under the No Action Alternative, development of the AHAWS would not occur. No impacts to
6 cultural resources would be expected as the result of implementing the No Action Alternative.

7 **3.12 Coastal Zone**

8 **3.12.1 Definition of the Resource**

9 The Coastal Zone Management Act (CZMA) of 1972 (Public Law [P.L.] 92-583), as amended
10 (P.L. 94-370), requires any Federal activity in or affecting a coastal zone to be consistent with
11 the policies and procedures of the state or territory's Coastal Zone Management Program. The
12 CZMA was passed to preserve, protect, develop, and where possible, restore or enhance the
13 nation's natural coastal zone resources. The Guam Coastal Management Program (GCMP) is an
14 expression of Guam's policy to guide the use, protection, and development of land and ocean
15 resources within Guam's coastal zone. The coastal zone of Guam includes all non-Federal
16 property on the island, including offshore islands and the submerged lands and waters extending
17 seaward to a distance of three nautical miles.

18 The entire island of Guam has been designated a coastal zone in the context of the CZMA and all
19 offshore islands in their entirety, including Cocos Island, under Section 15 CFR 923.31(a)(7)
20 (CZMA Federal Requirements). Most of the submerged lands surrounding Guam out to the
21 Territorial sea limit of three miles were conveyed to Guam in 1974 under Public Law 93-435.

22 In accordance with the Coastal Zone Management Act of 1972 (P.L.92-583), as amended (P.L.
23 94-370), the Bureau of Statistics and Plans (BSP), as the lead agency of the GCMP, is
24 responsible for conducting Federal consistency review for the following:

- 25 • Federal Agency Activities
- 26 • Activities Requiring a Federal License or Permit
- 27 • Federal Assistance to Local Governments

28
29 The review to establish consistency with GCMP policies as stated in Government of Guam E.O.
30 78-37 is conducted as specified in 15 CFR Part 930.

31 **3.12.2 Evaluation Criteria**

32 Consistency with the GCMP is determined based on an evaluation of an action's effects on
33 Guam's coastal zone resources and consistency to the maximum extent practical with the
34 policies and procedures of the program.

35 **3.12.3 Alternative 1: Development of the AHAWS at 15 Locations on Guam**

36 No effects to Guam's coastal zone would be expected under Alternative 1. The Proposed Action
37 under Alternative 1 would be consistent with the policies and procedures of the GCMP.

38

1 GHS/OCD would be required to obtain GCMP consistency determination from Guam BSP prior
2 to project implementation. Final determination of effect will be based on Guam BSP
3 concurrence with the completed GCMP form. The completed GCMP Consistency Form is
4 included in **Appendix B**.

5 **3.12.4 Alternative 2: No Action Alternative**

6 Under the No Action Alternative, development of the AHAWS would not occur. No impacts to
7 Guam’s coastal zone would be expected as the result of implementing the No Action Alternative.

8 **3.13 Infrastructure**

9 **3.13.1 Definition of the Resource**

10 Infrastructure consists of the systems and physical structures that enable a population in a
11 specified area to function and includes utility lines and the transportation system. Infrastructure
12 is wholly human-made, with a high correlation between the type and extent of infrastructure and
13 the degree to which an area is characterized as “urban” or developed. The availability of
14 infrastructure and its capacity to support growth are generally regarded as essential to the
15 economic growth of an area. Utilities generally include water supply, storm drainage systems,
16 sanitary sewer and wastewater systems, power supply, and solid waste management.

17
18 The transportation resource is defined as the system of roadways, highways, and other
19 transportation facilities and systems that are in the vicinity of a project site and could be
20 potentially affected by an action. The resource also includes parking, access, and vehicular
21 movement in proximity to the project site. Transportation represents the movement of humans
22 and commodities from one place to another. It is directly related to areas of production and
23 habitation and to the system of vehicle access roads and alternative forms of travel, including rail
24 and air. Primary roadways (e.g., major interstates) are principal routes designed to move traffic
25 efficiently to adjacent areas. Secondary roadways or arterials (e.g., major surface streets) are
26 designed to provide access to residential, commercial, and parking areas and access points for the
27 installation.

28 **3.13.2 Existing Conditions**

29 **Water Supply.** There is no water supply directly to the 15 proposed siren site locations. There is
30 access to GWA supplied water immediately adjacent to sites 2, 3, 5, 6, 7, 8, 10, 11, 12, 13, and
31 14. There is an irrigation water line adjacent to Site 1. The currently is no water available at
32 sites 4, 9 and 15.

33 **Storm Drainage System.** Storm water systems such as storm water gutters, drop inlets, culverts,
34 and outfalls convey precipitation away from developed sites to appropriate receiving surface
35 waters. Storm water systems can employ a variety of devices to slow the rapid movement of
36 runoff and provide the benefit of reducing sediment transport into surface waters. Surface water
37 and drainages characteristics in proximity to the proposed siren locations are discussed in
38 **Section 3.8.** Areas adjacent to the proposed siren locations that could generate storm water
39 runoff include roads and parking lots adjacent to sites 6, and 9; roads adjacent to sites 1, 3, 4, 7, 8
40 and 15; parking lots adjacent to sites 2, 5, 10 and 12; roof top associated with site 11; a tennis
41 court and parking lot associated with site 13; and track and field surfaces associated with site 14.

1 These features have the potential to produce sheet flow runoff during storm events. Some of the
2 roads and parking areas currently have storm water conveyance features to direct flows during
3 storm events.

4 **Sanitary Sewer and Wastewater System.** There currently is no industrial wastewater or non-
5 storm water discharges at any of the proposed siren locations.

6 **Electrical System.** There is no electrical power supplied directly to any of the proposed siren
7 sites. There are currently power sources in the form of existing GPA power poles or light poles
8 immediately adjacent to all of the proposed siren locations with the exception of sites 1 and 4.

9 **Solid Waste.** The proposed siren locations do not currently generate any solid wastes with the
10 exceptions of sites 5 and 12. There is currently a trash dumpster at Site 5 (see **Photo 5** in
11 **Section 2.3.3**). Trash and debris is also currently being stored at Site 12 (see **Photo 12** in
12 **Section 2.3.3**). The trash at Site 12 was designated to be non-hazardous based on an inspection
13 conducted by Guam EPA on November 13, 2013 (See **Appendix C**).

14 **Transportation.** There is currently road access directly to all of the proposed site locations with
15 the exception of Site 14. Proposed Site 14 is in the athletic field to JFK High School. Access to
16 the proposed siren location would be through the high school parking lot and then the existing
17 athletic field track. Site 3 and 9 are located immediately adjacent to Route 4 and Site 15 is
18 adjacent to Gun Beach Road.

19 **3.13.3 Evaluation Criteria**

20 Evaluation of potential impacts on infrastructure and infrastructure systems considers primarily
21 whether a proposed action would exceed capacity or place unreasonable demand on a specific
22 utility. Sustainable design measures would be incorporated where practicable to reduce use and
23 demand. Additionally, construction activities and materials would incorporate Leadership in
24 Energy and Environmental Design (LEED) criteria where practical, such as use of solar power,
25 to demonstrate good environmental stewardship. The construction contractor would coordinate
26 with local utility companies through the DPW prior to commencement of any construction
27 activities to determine the utility locations, such as sewer, telephone, fuel, electric, water lines, or
28 any other underground utilities that could be encountered during construction activities. Any
29 permits required for demolition, excavation, and trenching would be obtained prior to the
30 commencement of ground disturbing activities. Impacts on transportation are considered to be
31 adverse if an action would result in a substantial increase in traffic on local roadways.

32 **3.13.4 Alternative 1: Development of the AHAWS at 15 Locations on Guam**

33 **Water Supply.** No impacts to water supply would be expected under Alternative 1. Water use
34 would be expected to be limited to minor amounts necessary to mix concrete for the siren pad
35 and sidewalk and water consumed by personnel constructing the AHAWS sites.

36 **Storm Drainage System.** Short-term and long-term, direct, negligible, adverse effects on storm
37 water drainage systems would be expected as a result of implementing Alternative 1. Ground
38 disturbance associated with construction activities would temporarily increase the potential for
39 soil erosion and sediment transport during storm events. During construction, erosion and
40 sedimentation and storm water management practices would be implemented and maintained

1 consistent with the Guam EPA Soil Erosion and Sediment Control Regulations, 10 GCA Chapter
2 47, Water Pollution Control Act to minimize the potential for runoff during storm events. Up to
3 approximately 300 square feet of impervious surfaces would be created at all of the proposed
4 locations except sites 5, 11 and 12, where the sirens would be located on existing impervious
5 surfaces. Long-term effects would be expected as a result of an increase in runoff associated
6 with the approximately 15 feet by 20 feet of impervious surfaces at all sites except sites 5, 11 and
7 12. The runoff associated with the increased impervious surface at the sites would be expected
8 to be minimal and storm water BMPs would be implemented as necessary to ensure that any
9 increase in runoff would be properly controlled and would not affect the existing storm drainage
10 systems.

11 ***Sanitary Sewer and Wastewater System.*** Short-term, direct, negligible adverse effects would be
12 expected from implementing Alternative 1 as a result of the use of available wastewater facilities
13 during construction of the AHAWS at each of the proposed locations. The slight increase would
14 be temporary and would not be expected to exceed existing capacities.

15 ***Electrical System.*** No effects to the electrical systems at each of the proposed locations would
16 be expected from implementing Alternative 1. The construction contractor would be expected
17 to provide their own source of electrical power for site development activities. The AHAWSs
18 would rely on solar energy as a power source and no other source of electrical power would be
19 needed.

20 ***Solid Waste.*** Short-term, direct and indirect, negligible adverse effects on solid waste
21 management would be expected from implementing Alternative 1. Any increases in solid waste
22 associated with construction activities would be minimal and temporary in nature, and would be
23 disposed of in accordance with relevant Federal, territorial and local regulations. Demolition and
24 construction materials would be recycled or reused to the greatest extent possible. There is
25 currently a trash dumpster at Site 5. The dumpster would be moved to a different location prior
26 to implementing the Proposed Action. Trash and debris is also currently being stored at Site 12.
27 The trash at Site 12 was designated to be non-hazardous based on an inspection conducted by
28 Guam EPA on November 13, 2013 (See **Appendix C**). The trash would be removed prior to
29 implementing the Proposed Action.

30 ***Transportation.*** Short-term, direct, negligible adverse effects on transportation would be
31 expected at sites 3, 9 and 15 during construction activities. The three sites are located adjacent to
32 existing roadways. Traffic flow could be effected as a result of slow down to observe
33 construction activities adjacent to the road. Short-term diversion of traffic could also be
34 necessary to locate equipment and structures (i.e. siren poles) during site development activities.
35 If lane closures were determined to be needed during construction at sites 3, 9 or 15, then traffic
36 plans would be developed as needed and would be approved by DPW. No short-term
37 transportation impacts would occur at other sites. No long-term transportation impacts would
38 occur at any sites.

39 **3.13.5 Alternative 2: No Action Alternative**

40 Under the No Action Alternative, development of the AHAWS would not occur. The existing
41 conditions, as described in Section 3.12.2, would remain the same. No impacts on utilities,

1 infrastructure, or transportation would be expected from implementation of the No Action
2 Alternative.

3 **3.14 Socioeconomic Resources and Environmental Justice**

4 **3.14.1 Definition of the Resource**

5 *Socioeconomic Resources*

6 Socioeconomic Resources is defined as the basic attributes and resources associated with
7 population, demographics, and economic activity. Also included with socioeconomic resources
8 are concerns pursuant to EO 13045, *Protection of Children from Environmental Health Risks*
9 *and Safety Risks*. This EO directs Federal agencies to identify and assess environmental health
10 and safety risks that might disproportionately affect children.

11 The Region of Influence (ROI) is a geographic area selected as the basis on which demographic
12 and economic impacts of project alternatives are analyzed. The ROI for socioeconomic
13 conditions is considered to be the census tracts including all of Guam.

14 *Environmental Justice*

15 *Executive Order 12898, Federal Actions to Address Environmental Justice in Minority*
16 *Populations and Low-Income Populations* requires Federal agencies to make achieving
17 environmental justice part of its mission. Specifically, each agency must identify and address
18 “disproportionately high and adverse human health or environmental effects of its programs,
19 policies and activities on minority populations and low-income populations.” The intent is to
20 prevent minority and low-income populations from being disproportionately affected by adverse
21 human health and environmental impacts of Federal actions.

22 EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-*
23 *Income Populations*, pertains to environmental justice issues and relates to various
24 socioeconomic groups and the health effects that could be imposed on them. EO 12898 was
25 issued on February 11, 1994, by President Clinton. This EO requires that Federal agencies’
26 actions substantially affecting human health or the environment do not exclude persons, deny
27 persons benefits, or subject persons to discrimination because of their race, color, or national
28 origin. The EO was created to ensure the fair treatment and meaningful involvement of all
29 people regardless of race, color, national origin, or income with respect to the development,
30 implementation, and enforcement of environmental laws, regulations, and policies.
31 Consideration of environmental justice concerns includes race, ethnicity, and the poverty status
32 of populations in the vicinity of an action.

33 **3.14.2 Existing Conditions**

34 Based on the 2010 census, Guam has a population of 159,358. This represents a 2.9 % increase
35 in the population since the 2000 census when the population was 154,805 (USCB 2014).
36 According to the 2010 census, the population of Guam is comprised of 37.1% Chamorro, 26.3%
37 Filipino, 11.3% other Pacific Islanders, 6.9 percent white; 6.3% other Asian, 2.3% other ethnic
38 origin or race and 9.8% mixed. Based on the census the age structure of Guam is characterized
39 by 34.9% ages 0-14, 59.9% ages 15-64 and 6.01% 65 years or older (USCB 2014). The

1 population breakdown is based on 2000 census data. The 2010 data are not yet available for
2 Guam (USCB 2014).

3 **3.14.3 Evaluation Criteria**

4 Impacts would be considered to be major if an action resulted in any of the following:

- 5 • Substantial change in the local or regional population; and housing, community general
6 services (health, police, and fire services), or social conditions from the demands of
7 additional population/population shifts
- 8 • Substantial change in the local or regional economy, employment, or spending or earning
9 patterns
- 10 • Disproportionately high and adverse human health and environmental impacts on
11 minority or low-income populations.

12 **3.14.4 Alternative 1: Development of the AHAWS at 15 Locations on Guam**

13 Short-term and long-term, direct, negligible, moderate beneficial impacts to socioeconomic
14 conditions would be expected as a result of implementing the Proposed Action under Alternative
15 1. Construction of the AHAWS at the 15 proposed locations would provide jobs for personnel
16 working on the sites. It is possible that additional personnel might need to be hired to support
17 development of the sites. The number of personnel needed to construct the sites would not be
18 expected to be many, so beneficial effects associated with increased employment would be
19 expected to be negligible. Long-term moderate beneficial effects would be expected as a result
20 of the establishment of an improved hazard warning system for all residents and other people on
21 Guam. Because the Proposed Action would affect all residents of Guam equally, low-income or
22 minority populations would not be disproportionately impacted.

23 **3.14.5 Alternative 2: No Action Alternative**

24 Long-term, direct, minor, adverse impacts to socioeconomic resource conditions would be
25 expected under the No Action Alternative. Under the No Action Alternative no measures would
26 be taken to enhance the emergency preparedness of the residents and other occupants of Guam
27 and to better protect life and property from all hazards. The AHAWS would not be constructed
28 at the 15 locations and Guam would continue to rely on the current approach to notifying people
29 of potential hazards including television and radio announcements and warnings broadcasted via
30 vehicle mounted speaker systems.

1 **4.0 Cumulative and Adverse Effects**

2 **4.1 Cumulative Effects**

3 Cumulative effects on environmental resources result from incremental effects of projects, when
4 combined with other past, present, and reasonably foreseeable future projects in the area
5 regardless of what agency or person undertakes such other actions (40 CFR Part 1508.7).
6 Cumulative effects can result from individually minor, but collectively substantial, actions
7 undertaken over a period of time by various agencies (Federal and territorial) or individuals
8 (including corporations). CEQ guidance in considering cumulative effects affirms this
9 requirement, stating that the first steps in assessing cumulative effects involve defining the scope
10 of the other actions and their interrelationship with a proposed action. The scope must consider
11 other projects that coincide with the location and timetable of a proposed action and other
12 actions. Cumulative effects analyses must also evaluate the nature of interactions among these
13 actions (CEQ 1997).

14 To identify cumulative effects, the analysis needs to address two fundamental questions:
15

- 16 1. Does a relationship exist such that affected resource areas of the Proposed Action or
17 alternatives might interact with the affected resource areas of past, present, or reasonably
18 foreseeable actions?
- 19 2. If such a relationship exists, then does an EA or EIS reveal any potentially significant
20 impacts not identified when the Proposed Action is considered alone?

21 The scope of the cumulative effects analysis involves both timeframe and geographic extent in
22 which effects could be expected to occur, and a description of what resources could potentially
23 be cumulatively affected.

24 **4.2 Reasonably Foreseeable Actions**

25 Reasonably foreseeable actions include projects that have occurred recently or are likely to occur
26 concurrently with or shortly following implementation of this Proposed Action. Cumulative
27 effects analysis would encompass the expected construction period and testing of the 15
28 AHAWS sirens. For most resources, the spatial area for consideration of cumulative effects
29 includes the areas immediately surrounding the 15 siren locations. The following presents brief
30 descriptions and a summary of potential or known environmental consequences associated with
31 reasonably foreseeable actions.

32 **School Improvements** – The Island’s schools will receive funding for improvements. Eight
33 schools have been listed on the priority list and 24 schools have been identified to receive
34 renovations. Of these schools approximately five schools are located near identified tower
35 locations. Renovations at these schools will likely begin and extend over the next five years.

36 **Guam Transportation Improvement Plan (GTIP)** – The Island will be undergoing
37 improvements in roadways, bridges, traffic signal systems, bus stops and other improvements as
38 described in the GTIP FY12- FY15- Amendment No.2. Projects in the GTIP are scheduled to
39 occur in 2014 and 2015.

1 **Guam and CNMI Military Relocation** – Approximately 5,000 Marines and their dependents
2 will transfer from Okinawa Japan to Guam. The buildup will require infrastructure
3 improvements throughout the island to support this increase. The transfer will likely occur
4 within the next five years. A Supplemental EIS of the relocation is currently ongoing.

5 **Port Authority of Guam** – The Port Authority of Guam is undergoing a Maritime
6 Administration (MARAD) port modernization project. This project will result in modernization
7 and improvements at the port. The port modernization project is ongoing and is scheduled to be
8 completed in 2015.

9 **4.3 Cumulative Impacts of Reasonably Foreseeable Actions and the Proposed Action**

10 **Land use.** No cumulative effects on land use would occur because there would be no change in
11 land use under the Proposed Action.

12 **Noise.** Negligible cumulative effects to noise would be expected. Noise occurring as a result of
13 implementing the four identified project scenarios would combine with noise associated with the
14 AHAWS sirens during testing of the system. These cumulative effects would only be expected
15 during testing of the AHAWS system or during a hazard warning event.

16 **Air Quality and Greenhouse Gas Emissions.** Negligible cumulative impacts to air quality or
17 greenhouse gas emissions would be expected at Site 11. Air quality or greenhouse gas emissions
18 impacts would only occur during AHAWS construction. Except for the port improvement
19 project, none of the identified project scenarios would occur during AHAWS construction. Port
20 improvements are not occurring immediately adjacent to the proposed AHAWS site. Emissions
21 associated with port improvements when combined with those from the AHAWS development
22 would be expected to result in a short-term negligible cumulative effect. No other projects are
23 expected to be implemented in the immediate proximity to the AHAWS sites during their
24 construction.

25 **Safety.** No cumulative impacts to safety would be expected. Safety related effects would be
26 negligible as a result of implementing the Proposed Action and would only occur during
27 AHAWS construction. Except for the port improvement project, none of the identified project
28 scenarios would occur during AHAWS construction. No other projects are expected to be
29 implemented in the immediate proximity to the AHAWS sites during their construction.

30 **Geologic Resources.** No cumulative effects to geologic resources would be expected as a result
31 of implementing the Proposed Action. Impacts to geological resources would be limited to the
32 footprint of construction and soils would be stabilized after construction. Except for the port
33 improvement project, none of the identified project scenarios would occur during AHAWS
34 construction. AHAWS development at Site 11 would occur on the roof of the Port Authority
35 Administration Building and there would be no effects to geological resources. No other
36 projects are expected to be implemented in the immediate proximity to the AHAWS sites during
37 their construction.

38

1 **Biological Resources.** Negligible cumulative effects to biological resources would be expected
2 as a result of implementing the Proposed Action. Future Guam transportation improvement
3 projects and the Guam and CNMI Military Relocation could result in impacts to biological
4 resources as a result of development and construction associated with the actions. These actions
5 would not occur at the same time that AHAWS development would occur, and affects associated
6 with AHAWS development would be expected to have negligible cumulative effects when
7 combined with the future actions occurring in proximity to the siren sites.

8 **Visual Resources.** No cumulative effects on visual resources would occur because there would
9 be no adverse effects expected to visual resources under the Proposed Action.

10 **Cultural Resources.** No cumulative effects on cultural resources would occur because there
11 would be no adverse effects to cultural resources under the Proposed Action with
12 implementation of the Archaeological Subsurface Testing and Recovery Plan.

13 **Coastal Zone Management.** No cumulative effects on coastal zone management resources
14 would be expected because the Proposed Action would be consistent with the policies and
15 procedures of the GCMP.

16 **Infrastructure.** No cumulative effects on infrastructure would occur because there would be no
17 effects expected to infrastructure under the Proposed Action.

18 **Socioeconomic Resources and Environmental Justice.** No cumulative effects to socioeconomic
19 resources or environmental justice would be expected as a result of implementing the Proposed
20 Action. Beneficial effects to the socioeconomic resources associated with the establishment of
21 the AHAWS would not be expected to be cumulatively effected by the reasonably foreseeable
22 actions.

23 **4.4 Unavoidable Adverse Effects**

24 Unavoidable adverse effects are impacts that cannot be fully mitigated or avoided. Unavoidable
25 adverse effects would result from implementation of the Proposed Action. These effects are
26 considered to be negligible to minor.

27 While some aspects of the Proposed Action would result in adverse effects, most of the
28 anticipated environmental effects are associated with construction and short-term in nature.
29 Construction activities would comply with territorial regulations and ordinances, and would
30 include implementation of Best Management Practices (BMPs), which would reduce the
31 potential for adverse effects.

32 **Noise.** Under the Proposed Action, impacts associate with increased noise levels would be
33 expected during monthly AHAWS testing activities. Following the completion of installation of
34 the AHAWSs, PSAs and outreach would be conducted to inform the public of the system,
35 associated monthly testing and what to do during the tests. Outreach would also be conducted
36 prior to each monthly testing event reducing the potential for adverse effects associated with
37 increased noise levels and concerns over the reason for the sounding of the sirens.

1 **Air Quality.** Impacts to ambient air quality would be expected under the Proposed Action
2 during construction activities. Emissions would be expected from construction equipment during
3 site development activities. Construction equipment would be expected to be properly
4 maintained reducing the level of emissions to those associated with properly running equipment.
5 Emissions associated with the Proposed Action would only be expected during site development
6 and would be expected to have negligible impacts to ambient air quality.

7 **Geological Resources.** Under the Proposed Action, construction activities, such as grading and
8 excavation for siren pole placement would result in some minor soil disturbance. The
9 disturbance would occur at all locations except the Agat Marina (Site 5), Pago Bay (Site 9) and
10 Port Authority of Guam (Site 11) were the proposed siren locations are on existing concrete
11 pads, or structures. Implementation of BMPs during construction would limit environmental
12 consequences resulting from ground-disturbing activities. Standard erosion and sediment control
13 and storm water BMPs would be implemented to reduce potential adverse impacts.

14 **Biological Resources.** Under the Proposed Action, impacts to biological resources would be
15 expected to be limited to preparation of the sites during construction. Some clearing of
16 vegetation would occur at most of the sites except the Agat Marina (Site 5), Pago Bay (Site 9)
17 and Guam Port Authority (Site 11). Impacts to vegetation would be limited primarily to removal
18 of mowed and maintained grasses at the proposed siren locations.

19 **4.5 Irreversible or Irrecoverable Commitments of Resources**

20 An irreversible or irretrievable commitment of resources refers to impacts on or losses to
21 resources that once gone, cannot be recovered or replaced. A commitment of resources is related
22 to use or destruction of nonrenewable resources, and effects that such a loss will have on future
23 generations. For example, if prime farmland is developed there would be a permanent loss of
24 agricultural productivity. The Proposed Action would involve the irreversible and irretrievable
25 commitment of material resources and energy, land resources, and human resources. The impacts
26 on these resources would be permanent and are described below.

27 **Material Resources.** Material resources irretrievably used for the Proposed Action would
28 include steel, concrete, and other building materials. Such materials are not in short supply and
29 would not be expected to limit other unrelated construction activities. The irretrievable use of
30 material resources would be negligible.

31 **Energy Resources.** Energy resources used for the Proposed Action would be irretrievably lost.
32 These would include petroleum-based products (e.g., gasoline and diesel) and electricity. During
33 construction, gasoline and diesel fuel would be used for the operation of construction vehicles.
34 Electricity would be used for operation of some construction equipment during development of
35 the sites. Consumption of these energy resources would be expected to place a negligible
36 demand on their availability in the region.

37 **Human Resources.** The use of human resources for construction is considered an irretrievable
38 loss only in that it would preclude such personnel from engaging in other work activities.
39 However, the use of human resources for the Proposed Action would represent employment
40 opportunities, and is considered beneficial.

1 **5.0 Mitigation Measures**

2 Mitigation measures are those actions that avoid, reduce, or compensate for effects caused by the
3 Proposed Action. Some minimization measures are already incorporated into the Proposed
4 Action to avoid and reduce the potential for adverse effects. Other minimization measures could
5 be characterized as BMPs and further reduce or compensate for adverse effects. **Section 3** of
6 this EA evaluated potentially adverse effects on the environment for each resource area as a
7 result of implementing either Alternative 1 or Alternative 2. This section addresses the practical
8 measures that would be taken to ensure adverse effects are minimized or eliminated.

9 General categories of mitigation measures include:

- 10 • Avoiding certain impacts altogether by not taking a certain action or parts of an action;
- 11 • Minimizing impacts by limiting the degree or magnitude of the action and its
12 implementation;
- 13 • Rectifying impacts by repairing, rehabilitating, or restoring the affected environment;
- 14 • Reducing or eliminating impacts over time by preservation and maintenance operations
15 during the life of the action; and/or
- 16 • Compensating for impacts by replacing or providing substitute resources or
17 environments.

18 Adverse impacts to resources at the 15 AHAWS sites during construction are not expected, or
19 are negligible to minor, so mitigation measures include primarily BMPs that are typically
20 implemented at construction sites. Mitigation during monthly testing of the AHAWS would
21 include primarily public outreach. Beneficial impacts to the residents and occupants of Guam
22 would be expected in the event of hazard as a result of improved and more rapid notification of
23 the impending hazard prior to its occurrence. The following text provides examples of
24 mitigation measures and BMPs that would be implemented to reduce potential adverse impacts
25 associated with the placement and testing of the AHAWS on Guam.

26 **Construction Phase BMPs:**

- 27 • No activities would occur at night so that disturbance of wildlife resources would not
28 occur as a result of lighting or construction related noise. All work would be conducted
29 during daylight hours. Any associated lighting would be directed away from the
30 shoreline to minimize disturbance of wildlife species. If active bird nests were found in
31 close proximity to the project site during construction activities, actions would be taken
32 to avoid adverse effects to the nest in compliance with the MBTA.

- 1 • If Micronesian starlings were observe at any of the AHAWS sites during construction,
2 the Guam DAWR would be notified to determine appropriate steps to avoid any impacts
3 to the bird.
- 4 • Vegetation removal would be limited to the area necessary to accommodate the
5 construction footprint or line of sight for the tower transmitter.
- 6 • Any revegetation efforts would only use native species.
- 7 • Areas subject to disturbance as a result of the Proposed Action would be maintained to
8 avoid the spread of invasive species.
- 9 • All project-related materials and equipment would be cleaned of pollutants prior to use
10 and prior to arriving at the siren construction locations.
- 11 • Coral would not be a component of fill or used in any concrete mix unless from a
12 permitted source.
- 13 • GHS/OCD would implement the Archaeological Subsurface Testing and Recovery Plan
14 for construction activities at Sites 5, 6, 9, and 15. Although low, the potential to discover
15 unexpected subsurface historic properties exists at the other sites as well. Therefore,
16 GHS/OCD would be responsible for halting work in the event of an unanticipated
17 discovery during construction and notifying FEMA as soon as practicable. If FEMA
18 determines that the discovery has the potential to be a significant historic property,
19 FEMA would require GHS/OCD to stop all construction in the vicinity of the discovery
20 and to take all reasonable measures to avoid or minimize harm to the property until
21 FEMA concludes consultation with GHPO.
- 22 • GHS/OCD would obtain any necessary building permits from the Guam Department of
23 Public Works who is responsible for administering Guam’s floodplain ordinance.
- 24 • If lane closures were determined to be needed during construction at sites 3, 9 or 15, then
25 traffic plans would be developed as needed and would be approved by DPW.
- 26 • All debris removed from the environment would be disposed of at an approved upland
27 landfill site.
- 28 • Silt fencing would be installed and maintained around all construction areas to minimize
29 potential for erosion and sedimentation associated with site preparation.
- 30 • GHS/OCD or its contractor would prepare and implement an erosion control and
31 restoration plan to control short-term and long-term erosion and sedimentation effects.

1 The plan would include all the necessary local jurisdiction requirements regarding
2 erosion control and would implement BMPs for erosion and sediment control as required.
3 Work would be curtailed during adverse weather to prevent erosion and minimize
4 potential for the transport of sediment off site in storm water.

- 5 • Erosion control and storm water BMPs would be installed at appropriate locations, as
6 necessary, to attenuate storm water runoff and minimize potential for erosion and
7 potential transport of storm water pollutants off site.
- 8 • Erosion control devices would be monitored during construction and augmented as
9 necessary if new erosion points are discovered. In the event of pending storms, erosion
10 control devices would be inspected to ensure that such devices are in place and are
11 functional. If erosion control devices are found to be non-functional, they would be fixed
12 within 24 hours. Monitoring and maintenance of erosion control devices and adjacent
13 disturbed areas would continue during and immediately after significant storm events.
- 14 • Any soil exposed near water as part of the project would be protected from erosion (with
15 plastic sheeting, filter fabric, etc.) after exposure and stabilized as soon as practicable
16 (with vegetation matting, hydro seeding, etc.).
- 17 • The construction contractor would prepare a spill prevention and clean-up plan. Spill
18 control BMPs would be implemented anytime chemicals and/or hazardous substances are
19 stored or used at the AHAWS sites. Employees would be educated in proper material
20 handling, spill prevention, and clean-up to minimize potential for impacts to water
21 resources including groundwater. Clean-up materials would be on-site and located near
22 material storage and use.
- 23 • Dedicated fueling areas and refueling practices would be designated and a contingency
24 plan to control petroleum products accidentally spilled during the project would be
25 developed. Drip pans, absorbent pads, and containment booms would be stored on-site,
26 if appropriate, to facilitate the cleanup of accidental petroleum releases.
- 27 • A litter control program would be instituted at the project sites. All construction
28 personnel would ensure their food scraps, paper wrappers, food containers, cans, bottles,
29 and other trash from the project area are deposited in covered or closed trash containers
30 to minimize potential for attracting pests (i.e., rats). The trash containers would be
31 removed from the project area at the end of each working day.
- 32 • All tools, gear, and construction scrap would be removed upon completion of work in
33 order to prevent the attraction of nonnative pests (i.e., rats).

1 **Testing Phase BMPs:**

- 2 • Public Service Announcements and outreach would be conducted to inform the public of
3 the AHAWS, associated monthly testing and what to do during the tests. Outreach would
4 also be conducted prior to each monthly testing event.

5 **Other Measures:**

- 6 • A special agreement is being negotiated between the Nikko Hotel and GovGuam to
7 locate an AHAWS tower on the hotel property. This special agreement would be
8 executed before installing the tower or conducting any site preparation.

1 **6.0 List of Preparers**

2 **Shannon Cauley**

3 B.S. Geology
4 Graduate Studies Natural Resources
5 Graduate Studies Geology
6 USACE Certified Wetland Delineator
7 Certified Professional Soil Scientist
8 Years of Experience: 31
9 Primary Author

10

11 **Claudia Lamparzyk**

12 B.A. English
13 M.A Urban Planning
14 Years of Experience: 8
15 Editorial Review

16

17 **Dan Savercool**

18 M.S. Bio-environmental Oceanography
19 B.A. Zoology/Marine Science
20 A.A.S. Natural Resources Conservation
21 Senior Certified Military Natural Resource Professional
22 Certified Senior Ecologist
23 Years of Experience: 33
24 Senior Technical Review

25

26 **Jaquay Soriano**

27 B.S. Agriculture
28 Certified Quality Control Manager
29 Years of Experience: 9
30 Primary Author

31

32

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APPENDIX A
APPLICABLE LAWS, REGULATIONS AND EXECUTIVE ORDERS

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Appendix A

Applicable Laws, Regulations, Policies, and Planning Criteria

When considering the affected environment, physical, biological, economic, and social environmental factors must be considered. In addition to the National Environmental Policy Act (NEPA) there are other environmental laws as well as Executive Orders (EOs) to be considered when preparing Environmental Assessments (EAs) and Environmental Impact Statements (EISs). These laws are summarized below.

Noise

- *The Air Installation Compatible Use Zone (AICUZ) Program*, (Air Force Instruction [AFI] 32-7063), provides guidance to air bases and local communities in planning land uses compatible with airfield operations. The AICUZ program describes existing aircraft noise and flight safety zones on and near U.S. Air Force (USAF) installations.

Land Use

- Land use planning in the USAF is guided by *Land Use Planning Bulletin, Base Comprehensive Planning* (HQ USAF/LEEVX, August 1, 1986). This document provides for the use of 12 basic land use types found on a USAF installation. In addition, land use guidelines established by the U.S. Department of Housing and Urban Development (HUD) and based on findings of the Federal Interagency Committee on Noise (FICON) are used to recommend acceptable levels of noise exposure for land use.

Air Quality

- The Clean Air Act (CAA) of 1970 (42 United States Code [U.S.C.] 7401-7671q), and Amendments of 1977 and 1990, recognizes that increases in air pollution result in danger to public health and welfare. To protect and enhance the quality of the Nation's air resources, the CAA authorizes the U.S. Environmental Protection Agency (USEPA) to set six National Ambient Air Quality Standards (NAAQS) which regulate carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter pollution emissions. The CAA seeks to reduce or eliminate the creation of pollutants at their source, and designates this responsibility to state and local governments. States are directed to utilize financial and technical assistance as well as leadership from the Federal government to develop implementation plans to achieve NAAQS. Geographic areas are officially designated by USEPA as being in attainment or nonattainment for pollutants in relation to their compliance with NAAQS. Geographic regions established for air quality planning purposes are designated as Air Quality Control Regions (AQCRs). Pollutant concentration levels are measured at designated monitoring stations within the AQCR. An area with insufficient monitoring data is designated as unclassifiable. Section 309 of the CAA authorizes USEPA to review and comment on impact statements prepared by other agencies.
- An agency should consider what effect an action might have on NAAQS due to short-term increases in air pollution during construction as well as long-term increases resulting from changes in traffic patterns. For actions in attainment areas, a Federal agency may also be subject to USEPA's Prevention of Significant Deterioration (PSD) regulations. These regulations apply to new major stationary sources and modifications to such sources. Although few agency facilities will actually emit pollutants, increases in pollution can result from a change in traffic patterns or volume. Section 118 of the CAA waives Federal immunity from complying with the CAA and states all Federal agencies will comply with all Federal-and state-approved requirements.

- The Air Pollution Control Act of 1997 established the Air Pollution Control Permit Program and outlines coordinated territory-wide air pollution control efforts on Guam (10 Guam Code Annotated 49, Guam Public Law 24-40: 2).

Water Resources

- The Clean Water Act (CWA) of 1977 (33 U.S.C. 1251-1387), an amendment to the Federal Water Pollution Control Act of 1972, is administered by USEPA and sets the basic structure for regulating discharges of pollutants into U.S. waters. The CWA requires USEPA to establish water quality standards for specified contaminants in surface waters and forbids the discharge of pollutants from a point source into navigable waters without a National Pollutant Discharge Elimination System (NPDES) permit. NPDES permits are issued by USEPA or the appropriate state if it has assumed responsibility. Section 404 of the CWA establishes a Federal program to regulate the discharge of dredge and fill material into waters of the United States. Section 404 permits are issued by the U.S. Army Corps of Engineers (USACE). Waters of the United States include interstate and intrastate lakes, rivers, streams, and wetlands which are used for commerce, recreation, industry, sources of fish, and other purposes. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Each agency should consider the impact on water quality from actions such as the discharge of dredge or fill material into U.S. waters from construction, or the discharge of pollutants as a result of facility occupation.

- The Water Resources Conservation Act of 1985 (16 U.S.C. 2001-2009) outlines procedures for the conservation of water resources through the establishment of standards and guidelines for the operation of water wells on Guam (10 Guam Code Annotated Chapter 46, Guam Public Law 17-87). The Water Resources Conservation Act allows the government of Guam to regulate well drillers licenses, well drilling permits, and well operating permits; inspect wells; and install well meters.

- The Water Pollution Act of 1985 (33 U.S.C. 1251) outlines procedures for protecting Guam's water supply from pollution or contamination (10 Guam Code Annotated 47, Guam Public Law 17-87). The Water Pollution Act delegates the Guam Environmental Protection Agency as the authority responsible for conserving water resources and protecting, maintaining, and improving the quality and potability thereof for all reasonable and beneficial water uses. It also established the Guam Soil Erosion and Sediment Control Regulations.

- The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. 1451-1464) declares a national policy to preserve, protect and develop, and where possible restore or enhance the resources of the Nation's coastal zone. The coastal zone refers to the coastal waters and the adjacent shorelines including islands, transitional and intertidal areas, salt marshes, wetlands, and beaches, including those around the Great Lakes. The CZMA encourages states to exercise their full authority over the coastal zone, through the development of land and water use programs in cooperation with Federal and local governments. States and territories may apply for grants to help develop and implement management programs to support wise use of the land and water resources of the coastal zone. Development projects affecting land or water use or natural resources of a coastal zone, must ensure the project is, to the maximum extent practicable, consistent with the state or territories coastal zone management program.

- The Safe Drinking Water Act (SDWA) of 1974 (42 U.S.C. 201, et seq.) establishes a Federal program to monitor and increase the safety of all commercially and publicly supplied drinking water. Congress amended the SDWA in 1986, mandating dramatic changes in nationwide safeguards for drinking water and establishing new Federal enforcement responsibility on the part of USEPA. The 1986 amendments to the SDWA require USEPA to establish Maximum Contaminant Levels (MCLs), Maximum Contaminant Level Goals (MCLGs), and Best Available Technology (BAT) treatment techniques for

organic, inorganic, radioactive, and microbial contaminants; and turbidity. MCLGs are maximum concentrations below which no negative human health effects are known to exist. The 1996 amendments set current Federal MCLs, MCLGs, and BATs for organic, inorganic, microbiological, and radiological contaminants in public drinking water supplies.

- The Guam Safe Drinking Water Act of 1977 establishes policy and provision of safe drinking water (10 Guam Code Annotated, Guam Public Law 14-90). The Guam Environmental Protection Agency (GEPA) promulgates and enforces primary and secondary drinking water regulations, cross-connection and back flow prevention regulations, and underground injection control regulations.
- EO 11988, *Floodplain Management* (May 24, 1977) directs agencies to consider alternatives to avoid adverse effects and incompatible development in floodplains. An agency may locate a facility in a floodplain if the head of the agency finds there is no practicable alternative. If it is found there is no practicable alternative, the agency must minimize potential harm to the floodplain, and circulate a notice explaining why the action is to be located in the floodplain prior to taking action. Finally, new construction in a floodplain must apply accepted flood proofing and flood protection to include elevating structures above the base flood level rather than filling in land.

Biological Resources

- The Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1543) establishes a Federal program to conserve, protect, and restore threatened and endangered plants and animals and their habitats. The ESA specifically charges Federal agencies with the responsibility of using their authority to conserve threatened and endangered species. All Federal agencies must insure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction of critical habitat for these species, unless the agency has been granted an exemption. The Secretary of the Interior, using the best available scientific data, determines which species are officially threatened or endangered, and the U.S. Fish and Wildlife Service (USFWS) maintains the list. A list of Federal endangered species can be obtained from the Endangered Species Division, USFWS (703-358-2171). States or territories might also have their own lists of threatened and endangered species which can be obtained by calling the appropriate state or territories Fish and Wildlife office. Some species, such as the bald eagle, also have laws specifically for their protection (e.g., Bald Eagle Protection Act).
- The Endangered Species Act of Guam (5 Guam Annotated Code Chapter 63, Guam Public Law 15-36) delegates the Guam Department of Agriculture as the agency responsible for the management and conservation of plant and wildlife resources of Guam.
- The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-712), amended in 1936, 1960, 1968, 1969, 1974, 1978, 1986, and 1989, implements treaties and conventions between the United States, Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture or kill; possess, offer to sell, barter, purchase, or deliver; or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. The MBTA also makes it unlawful to ship, transport or carry from one state, territory, or district to another, or through a foreign country, any bird, part, nest, or egg that was captured, killed, taken, shipped, transported, or carried contrary to the laws from where it was obtained; and import from Canada any bird, part, nest, or egg obtained contrary to the laws of the province from which it was obtained. The U.S. Department of the Interior has authority to arrest, with or without a warrant, a person violating the MBTA.

- EO 13186, Conservation of Migratory Birds (January 10, 2001) creates a more comprehensive strategy for the conservation of migratory birds by the Federal government. The EO provides a specific framework for the Federal government's compliance with its treaty obligations to Canada, Mexico, Russia, and Japan. The EO provides broad guidelines on conservation responsibilities and requires the development of more detailed guidance in a Memorandum of Understanding (MOU). The EO will be coordinated and implemented by the USFWS. The MOU will outline how Federal agencies will promote conservation of migratory birds. The EO requires the support of various conservation planning efforts already in progress; incorporation of bird conservation considerations into agency planning, including NEPA analyses; and reporting annually on the level of take of migratory birds.
- EO 11514, *Protection and Enhancement of Environmental Quality* (March 5, 1970) states that the President, with assistance from the Council on Environmental Quality (CEQ), will lead a national effort to provide leadership in protecting and enhancing the environment for the purpose of sustaining and enriching human life. Federal agencies are directed to meet national environmental goals through their policies, programs, and plans. Agencies should also continually monitor and evaluate their activities to protect and enhance the quality of the environment. Consistent with NEPA, agencies are directed to share information about existing or potential environmental problems with all interested parties, including the public, in order to obtain their views.
- EO 11990, *Protection of Wetlands* (May 24, 1977) directs agencies to consider alternatives to avoid adverse effects and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland and the proposed construction incorporates all possible measures to limit harm to the wetland. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether or not to build in wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands.

Cultural Resources

- The Archaeological Resource Protection Act (ARPA) of 1979 (16 U.S.C. 470 aa-ll, et seq.) protects archaeological resources on public and Indian lands. It provides felony-level penalties for the unauthorized excavation, removal, damage, alteration, or defacement of any archaeological resource, defined as material remains of past human life or activities which are at least 100 years old. Before archaeological resources are excavated or removed from public lands, the Federal land manager must issue a permit detailing the time, scope, location, and specific purpose of the proposed work. ARPA also fosters the exchange of information about archaeological resources between governmental agencies, the professional archaeological community, and private individuals. ARPA is implemented by regulations found in 43 CFR Part 7.
- The National Historic Preservation Act (NHPA) of 1966 (16 U.S.C. 470-470x-6) sets forth national policy to identify and preserve properties of state, territorial, local, and national significance. The NHPA establishes the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Office (SHPOs) (or in Guam, the Guam Historic Preservation Office [GHPO], and the National Register of Historic Places [NRHP]). ACHP advises the President, Congress, and Federal agencies on historic preservation issues. Section 106 of the NHPA directs Federal agencies to take into account effects of their undertakings (actions and authorizations) on properties included in or eligible for the NRHP. Section 110 sets inventory, nomination, protection, and preservation responsibilities for federally owned cultural properties. Section 106 of the NHPA is implemented by regulations of the ACHP, 36 CFR Part 800. Agencies should coordinate studies and documents prepared under Section 106 with NEPA where appropriate. However, NEPA and NHPA are separate statutes and compliance with one does not constitute EA of the Placement of the AHAWS at 15 Locations on Guam

July 2014

compliance with the other. For example, actions which qualify for a categorical exclusion under NEPA might still require Section 106 review under NHPA. It is the responsibility of the agency official to identify properties in the area of potential effects, and whether they are included or eligible for inclusion in the NRHP. Section 110 of the NHPA requires Federal agencies to identify, evaluate, and nominate historic property under agency control to the NRHP.

- The Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001, et seq.) establishes rights of Indian tribes to claim ownership of certain “cultural items,” defined as Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony, held or controlled by Federal agencies. Cultural items discovered on Federal or tribal lands are first the property of lineal descendants if they can be determined, and second, the tribe owning the land where the items were discovered, of the tribe with the closest cultural affiliation with the items. Discoveries of cultural items on Federal or tribal land must be reported to the appropriate Indian tribe and the Federal agency with jurisdiction over the land. If the discovery is made as a result of a land use, activity in the area must stop and the items must be protected pending the outcome of consultation with the affiliated tribe.
- EO 11593, *Protection and Enhancement of the Cultural Environment* (May 13, 1971) directs the Federal Government to provide leadership in the preservation, restoration, and maintenance of the historic and cultural environment. Federal agencies are required to locate and evaluate all Federal sites under their jurisdiction or control which might qualify for listing on the NRHP. Agencies must allow the ACHP to comment on the alteration, demolition, sale, or transfer of property which is likely to meet the criteria for listing as determined by the Secretary of the Interior in consultation with the SHPO. Agencies must also initiate procedures to maintain federally owned sites listed on the NRHP.
- EO 13007, *Indian Sacred Sites* (May 24, 1996) provides that agencies managing Federal lands, to the extent practicable, permitted by law, and not inconsistent with agency functions, shall accommodate Indian religious practitioners’ access to and ceremonial use of Indian sacred sites, shall avoid adversely affecting the physical integrity of such sites, and shall maintain the confidentiality of such sites. Federal agencies are responsible for informing tribes of proposed actions that could restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites.
- EO 13287, *Preserve America* (March 3, 2003), orders the Federal Government to take a leadership role in protection, enhancement, and contemporary use of historic properties owned by the Federal Government, and promote intergovernmental cooperation and partnerships for preservation and use of historic properties. The EO established new accountability for agencies with respect to inventories and stewardship.

Socioeconomics and Environmental Justice

- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994) directs Federal agencies to make achieving environmental justice part of their mission. Agencies must identify and address adverse human health and/or environmental effects their activities have on minority and low-income populations, and develop agency-wide environmental justice strategies. The strategy must list “programs, policies, planning and public participation processes, enforcement, and/or rulemakings related to human health or the environment that should be revised to promote enforcement of all health and environmental statutes in areas with minority populations and low-income populations, ensure greater public participation, improve research and data collection relating to the health of and environment of minority populations and low-income populations, and identify differential patterns of consumption of natural resources among minority populations and low-

income populations.” A copy of the strategy and progress reports must be provided to the Federal Working Group on Environmental Justice. Responsibility for compliance with this EO lies with each Federal agency.

Hazardous Materials and Waste

- The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (42 U.S.C. 9601-9675) authorizes USEPA to respond to spills and other releases of hazardous substances to the environment, and authorizes the National Oil and Hazardous Substances Pollution Contingency Plan. CERCLA also provides a Federal Superfund to respond to emergencies immediately. Although the Superfund provides funds for cleanup of sites where potentially responsible parties cannot be identified, USEPA is authorized to recover funds through damages collected from responsible parties. This funding process places the economic burden for cleanup on polluters.
- The Pollution Prevention Act (PPA) of 1990 (42 U.S.C. 13101-109, et seq.) encourages manufacturers to avoid the generation of pollution by modifying equipment and processes, redesigning products, substituting raw materials, and making improvements in management techniques, training, and inventory control. Consistent with pollution prevention principles, EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (January 24, 2007 [revoking EO 13148]) sets a goal for all Federal agencies that promotes environmental practices, including acquisition of bio based, environmentally preferable, energy-efficient, water-efficient, and recycled-content products, and use of paper of at least 30 percent post-consumer fiber content. In addition, EO 13423 sets a goal that requires Federal agencies to ensure that they reduce the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of, increase diversion of solid waste as appropriate, and maintain cost effective waste prevention and recycling programs in their facilities. In addition, in Federal Register Volume 58 Number 18 (January 29, 1993), CEQ provides guidance to Federal agencies on how to “incorporate pollution prevention principles, techniques, and mechanisms into their planning and decision making processes and to evaluate and report those efforts, as appropriate, in documents pursuant to NEPA.”
- The Resource Conservation and Recovery Act (RCRA) of 1976 is an amendment to the Solid Waste Disposal Act. RCRA authorizes USEPA to provide for “cradle-to-grave” management of hazardous waste and sets a framework for the management of nonhazardous municipal solid waste. Under RCRA, hazardous waste is controlled from generation to disposal through tracking and permitting systems, and restrictions and controls on the placement of waste on or into the land. Under RCRA, a waste is defined as hazardous if it is ignitable, corrosive, reactive, toxic, or listed by USEPA as being hazardous. With the Hazardous and Solid Waste Amendments (HSWA) of 1984, Congress targeted stricter standards for waste disposal and encouraged pollution prevention by prohibiting the land disposal of particular wastes. The HSWA amendments strengthen control of both hazardous and nonhazardous waste and emphasize the prevention of pollution of groundwater.
- The Superfund Amendments and Reauthorization Act (SARA) of 1986 (42 U.S.C. 9601, et seq.) mandates strong clean-up standards, and authorizes USEPA to use a variety of incentives to encourage settlements. Title III of SARA authorizes the Emergency Planning and Community Right to Know Act (EPCRA), which requires facility operators with “hazardous substances” or “extremely hazardous substances” to prepare comprehensive emergency plans and to report accidental releases. If a Federal agency acquires a contaminated site it can be held liable for the cleanup as the property owner/operator. A Federal agency can also incur liability if it leases a property, as the courts have found lessees liable as “owners.” However, if the agency exercises due diligence by conducting a Phase I Environmental Site Assessment, it may claim the “innocent purchaser” defense under CERCLA. According to Title 42 U.S.C. 9601(35), to use this defense, the current owner/operator must show that it undertook “all appropriate

inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice” before buying the property.

- The Toxic Substance Control Act (TSCA) of 1976 (7 U.S.C. 136, et seq.) consists of four titles. Title I established requirements and authorities to identify and control toxic chemical hazards to human health and the environment. TSCA authorized USEPA to gather information on chemical risks, require companies to test chemicals for toxic effects, and regulate chemicals with unreasonable risk. TSCA also singled out polychlorinated biphenyls (PCBs) for regulation, and as a result PCBs are being phased out. TSCA and its regulations govern the manufacture, processing, distribution, use, marking, storage, disposal, cleanup, and release reporting requirements for numerous chemicals like PCBs. PCBs are persistent when released into the environment and accumulate in the tissues of living organisms. They have been shown to cause adverse health effects on laboratory animals and can cause adverse health effects in humans. TSCA Title II provides statutory framework for “Asbestos Hazard Emergency Response,” which applies only to schools. TSCA Title III, “Indoor Radon Abatement,” states indoor air in U.S. buildings should be as free of radon as the outside ambient air. Federal agencies are required to conduct studies on the extent of radon contamination in buildings they own. TSCA Title IV, “Lead Exposure Reduction,” directs Federal agencies to “conduct a comprehensive program to promote safe, effective, and affordable monitoring, detection, and abatement of lead-based paint and other lead exposure hazards.” Further, any Federal agency having jurisdiction over a property or facility must comply with all Federal, state, interstate, and local requirements concerning lead-based paint.

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APPENDIX B
COASTAL ZONE MANAGEMENT ACT COORDINATION

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APPENDIX C
AGENCY CORRESPONDENCE AND PUBLIC INVOLVEMENT

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United States Fish and Wildlife Service (USFWS)



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

In Reply Refer To:
2014-SL-0061

DEC 05 2013

Mr. Ambrosio Constantino, Jr.
Guam Homeland Security
Office of Civil Defense
221-B Chalan Palasyo Street
Agana Heights, Guam 96910

Subject: Species List for the Installation of the All Hazards Alert Warning System at 14 Locations throughout Guam

Dear Mr. Constantino:

This letter is in response to your request, received November 15, 2013, and additional information, received via email November 26, 2013, for a list of candidate, proposed, threatened, and endangered species, or proposed or designated critical habitat that may occur within the subject project area. The Guam Homeland Security/Office of Civil Defense, in coordination with the U. S. Department of Homeland Security, proposes to install siren devices, each of which is comprised of a 50-foot-tall pole and speaker system, at 14 locations throughout central and southern Guam. The sirens will aid in responses to threats or acts of terrorism, natural disasters, and emergencies.

Based on the information you provided and pertinent information in our files, the following federally listed species may be present within or near your project area. The threatened green sea turtle (*Chelonia mydas*) and endangered hawksbill sea turtle (*Eretmochelys imbricata*) may occur near siren locations adjacent to Guam shorelines. Siren locations near forested areas may be visited by the threatened Mariana fruit bats (*Pteropus mariannus mariannus*) (bats). There is no proposed or designated critical habitat within the project area.

For siren locations near shoreline and forested areas, we recommend that construction work only occur during daylight hours, as artificial lighting used for construction work at night can disorient nesting sea turtles, foraging or roosting bats, and seabirds which are protected under the Migratory Bird Treaty Act. Steps should be put in place for litter control and to prevent attracting or spreading pest species. It is our understanding that there will be no vegetation clearing for this project and no permanent lights attached to the devices. If any of this information changes, please contact us before proceeding with the project.

The proposed project is funded through the U.S. Department of Homeland Security, and as such,

**TAKE PRIDE
IN AMERICA** 

Mr. Ambrosio Constantino

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is subject to consultation under section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*), as amended. As a reminder, it is the Federal agency's (or their non-Federal designee) responsibility to make the determination of whether or not the proposed project "may affect" federally listed species or designated critical habitat. A "may affect, not likely to adversely affect" determination is appropriate when effects to federally listed species are expected to be discountable (*i.e.*, unlikely to occur), insignificant (minimal in size), or completely beneficial. This conclusion requires written concurrence from the U.S. Fish and Wildlife Service (Service). If a "may affect" determination is made, then the Federal agency must initiate formal consultation with the Service. Projects that are determined to have "no effect" on federally listed species and/or critical habitat do not require additional coordination or consultation. If you have any additional questions, please contact Ann Marie Gawel, Fish and Wildlife Biologist (phone: 671-355-5097; email: annmarie_gawel@fws.gov).

Sincerely,



ACTING FOR Loyal Mehrhoff
Field Supervisor

Department of Agriculture's Division of Aquatic and Wildlife Resources
(DAWR)



Edward J.B. Calvo
Governor
Raymond S. Tenorio
Lt. Governor

Department of Agriculture
Dipattamenton Agrikottura
163 Dairy Road, Mangilao, Guam 96913

Director's Office
Agricultural Dev. Services
Animal Health
Aquatic & Wildlife Resources
Forestry & Soil Resources
Plant Nursery
Plant Inspection Facility

300-7966/64; Fax 734-6569
300-7973/300-7967
300-7965
735-3955/56; Fax 734-6570
300-7976; Fax 300-3201
300-7974
475-1426/27; Fax 477-9487



Mariquita F. Taltague
Director

Deputy Director

October 23, 2013

Memorandum

To: Director, Guam Homeland Security, Office of Civil Defense
Attention: Pilar Carbullido, Program Coordinator III

From: Director, Department of Agriculture

Subject: **Federally and locally listed endangered species concerns related to the All Hazards Alert Warning System (AHAWS)**

Hafa Adai! We have reviewed the Guam Homeland Security's (GHS) grant application pertaining to the "All Hazards Alert Warning System (AHAWS) and any endangered species concerns. Funding is or will be submitted to the Federal Department of Homeland Security and up-to 15 sites are proposed for installation of the system to meet the needs of GHS.

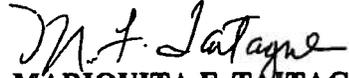
All sites are owned by the Government of Guam, but are held by various agencies or departments, including various mayor's offices, Guam Department of Education, Guam Waterworks Authority, and the Port Authority of Guam. The installation of communication towers according to the application involves placement of 50-60 foot towers on existing buildings or free-standing structures. The installation of concrete walls, and fencing for security reasons is involved.

We provide the following comments to the proposed locations.

1. Agat Marina (GFD) Location - The location of a system at a pre-existing facility should not impact endangered species.
2. JFK High School - No Endangered species concerns.
3. Talofof Elementary School - No Endangered species concerns.
4. Mayor's Office (Talofof) - No endangered species concerns.

5. Mayor's Office (Tamuning) - No endangered species concerns.
6. GHS/OCD (Agana Heights) - No endangered species concerns.
7. Pago Bay A-frame North End – Potentially, seabirds may be found around the area. Their presence should not prevent the project from moving forward. Please notify the Division of Aquatic & Wildlife Resources (DAWR) of the presence of seabirds, or shorebirds at the project site.
8. Inarajan Elementary School - Possibly, the locally listed Guam Micronesian Starling may be present. However, its presence should not prevent the project from moving forward. Please notify DAWR of their presence.
9. Mayor's Office (Yona) – No endangered species concerns.
10. Across Fort Soledad (Umatac) – Common Noddies and Common Fairy or White Terns may be present. However, their presence should not stop the project.
11. SD16 GWA Pump Station (Merizo) – Though no endangered species concerns exist, we suggest that any lighting system utilized for the facility should not face seaward. As such, it would not confuse seabirds or any listed green sea turtles. The locally listed Guam Micronesian Starling may be in the area. We advise that DAWR be notified of their presence.
12. UOG Agriculture Research Station (Inarajan) - There may Guam Micronesian starlings in the area but this should not stop the project. We advise that DAWR be advised of their presence.
13. Port Authority Guam (Piti) – The presence of migratory shore birds and possibly, other seabirds. We advise that DAWR be notified of their presence. Also, any use of lighting should not be seaward facing to avoid confusing any seabirds or sea turtles in the vicinity.
14. Senior Citizen Center (Agat) – Similarly to No. 13, caution to the migratory shore birds, and potentially, green sea turtles in the area should be exercised.
15. Right-of-Way Easement (Tumon) – Seabirds may be present at this location. We recommend that if these species are present, DAWR be notified. However, the presence of these species should not prevent the project from moving forward.

Please be reminded that this memorandum is not an authorization for "take". Should any listed species be discovered, DAWR should be notified on how to proceed. Also, if any listed species is found, it should be allowed to leave under its own volition. We also recommend that the State Historic Preservation Office be contacted for historic preservation concerns. Thank you very much for allowing us to comment.


MARIQUITA F. TAITAGUE

Attachment(s):

ALL HAZARDS WARNING SYSTEM LOCATIONS

NO.	LOCATION	OWNER	LAT (N)	LONG (E)	MUNICIPALITY	REMARKS
1	AGAT MARINA (GFD)	GOV'T	13-22-03.909	144-39-01.319	AGAT	PAG Property
2	JFK HIGH SCHOOL	GOV'T	13-30-05.861	144-47-39.55	TAMUNING	
3	TALOFOFO ELEMENTARY SCHOOL	GOV'T	13-21-12.989	144-45-39.033	TALOFOFO	
4	MAYOR'S OFFICE	GOV'T	13-29-17.415	144-47-00.066	TAMUNING	
5	MAYOR'S OFFICE	GOV'T	13-28-19.199	144-42-58.920	ASAN	
6	GHS/OCD	GOV'T	13-28-20.021	144-44-56.531	AGANA HEIGHT	
7	PAGO BAY-A FRAME NORTH END	GOV'T	13-25-21.388	144-46-55.503	CHALAN PAGO	
8	INARAJAN ELEMENTARY SCHOOL	GOV'T	13-16-26.636	144-44-45.864	INARAJAN	
9	MAYOR'S OFFICE	GOV'T	13-24-33.665	144-46-27.796	YONA	
10	ACROSS FORT SOLEDAD	GOV'T	13-17-39.256	144-39-41.298	UMATAAC	
11	SD16_GWA PUMP STATION	GOV'T	13-15-41.038	144-40-30.065	MERIZO	
12	UOG AG RESEARCH STATION	GOV'T	13-15-45.409	144-43-01.772	INARAJAN	
13	PORT AUTHORITY GUAM	GOV'T	13-27-47.446	144-40-04.428	PITI	
14	SENIOR CITIZENS CENTER	GOV'T	13-22-59.240	144-39-28.995	AGAT	
15	Right-of-Way Easement, Tumen	GOV'T	13-31-22	144-48-24	Tumen	Tumen-across-Nikke Hotel

on file

AHAWSFielddatasummary-Tino_JQ (1)

No.	Site	Date	Time Visited	Weather (*)	Cloud %	Wind (mph)	Mariana Fruit bat	Migratory Birds	Forest Birds-ES	Marine birds	Comments
1	Agat Marina	25-Nov-13	1425	0	15	0-5	0	0	0	0	Sea birds may occur
2	JFK High School	27-Nov-13	1630	0	10	0-5	0	0	0	0	migratory birds may occur
3	Talofofo Elementary School	26-Nov-13	0700	0	10	0-5	0	x	0	0	Lesser golden plovers were observed near the site (baseball field area)
4	Talofofo Mayor Office	26-Nov-13	0715	0	10	0-5	0	0	0	0	no occurrence
5	Tamuning Mayor Off	27-Nov-13	1500	0	10	0-5	0	0	0	0	no occurrence
6	GHS/OCD	27-Nov-13	1430	0	10	0-5	0	0	0	x	White fairy terns seen below cliff. Migratory birds may occur
7	Pago Bay A-Frame North	22-Nov-13	0700	0	10	0-5	0	0	0	0	migratory and marine birds may occur, possibly Common moorhen upstream of river-no affect
8	Inarajan Elementary School	22-Nov-13	0800	0	10	0-5	0	0	0	0	migratory birds may occur (open field habitat)
9	Yona Mayors Office	22-Nov-13	0720	0	10	0-5	0	0	0	0	no occurrence
10	Fort Soledad	22-Nov-13	0915	0	10	0-5	0	0	0	0	migratory and marine birds may occur
11	Merizo SD16 GWA Pump Station	22-Nov-13	0840	0	10	0-5	0	0	0	0	migratory, marine, Micronesian starling, Common moorhen, Mariana fruit bat possibly may occur
12	Inarjan UOG Agriculture Research Station	26-Nov-13	0800	0	10	0-5	0	0	0	0	migratory birds may occur
13	Port Authority Guam	25-Nov-13	1540	0	15	5-20	0	0	0	0	migratory and marine birds may occur
14	Agat Senior Citizen Center	25-Nov-13	1450	0	15	0-5	0	0	0	0	no occurrence
15	Tumon	27-Nov-13	1600	0	10	0-5	0	0	0	0	Micronesian starling, Mariana fruit bat, marine birds may occur

*Weather: 0-no rain, 1-drizzle, 2-slight, 3-moderate, 4-heavy

Seabirds may include brown noddy, and shearwaters

Migratory birds that may occur include Lesser Golden plover and other plovers, tattler species, and other species

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State Historic Preservation Office (SHPO)



FEMA

January 6, 2014

Ms. Lynda Bordallo Aguon
State Historic Preservation Officer
Guam Historic Resources Division
Department of Parks and Recreation
490 Chalan Palasyo
Agana Heights, Guam 96910

RE: FEMA-2010-SS-T0-0044 (16625)
Guam Homeland Security

Dear Ms. Bordallo Aguon:

The Department of Homeland Security – Federal Emergency Management Agency (FEMA) is considering a Homeland Security Grant application from the Guam Homeland Security to provide federal assistance in the installation of an All Hazards Warning System (AHWS) at fifteen (15) various locations identified by the Government of Guam and placed strategically throughout the island. The Applicant's proposed project would improve the island's overall response to threats or acts of terrorism as well as to natural disasters and emergencies once fully implemented.

The Applicant's propose project meets the definition of a federal undertaking pursuant to 36 CFR Part 800.16(y) and in accordance with 36 CFR Part 800.4(a)(1), FEMA has identified a direct Area of Potential Effect (APE) as the footprint of each tower installation.

FEMA has made a finding pursuant to 36 CFR Part 800.4(d)(1) that no historic properties would be affected by the Applicant's proposal and FEMA's subsequent undertaking of providing financial assistance in support of the AHWS. We have enclosed documentation in support of our finding in accordance with 36 CFR Part 800.11(d).

Ms. Lynda Bordallo Aguon
January 6, 2014
Page 2

We request your concurrence with our determination. If we do not receive an objection to our finding within 30 days of receipt of our documentation we will fund the proposed project. If you have any questions or require additional information please do not hesitate to contact Ms. Xushie Brue, at (510) 627-7043 or xushie.brue@fema.dhs.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Donna M. Meyer", with a long horizontal flourish extending to the right.

Donna M. Meyer, CEM/HPS
Deputy Regional Environmental Officer
Non-Disaster Grant Programs

Enclosures

DOCUMENTATION – NO HISTORIC PROPERTIES AFFECTED
All Hazards Warning System
Guam Homeland Security
January 2014

1) A description of the undertaking, specifying the Federal involvement, and its area of potential effects, including photographs, maps, drawings, as necessary;

The Department of Homeland Security – Federal Emergency Management Agency intends to provide a Homeland Security Grant to the Guam Homeland Security to install fourteen (14) 55-foot concrete poles with one (1) siren being placed on the roof on an existing building. The proposed project would aid in protecting the island inhabitants from natural and man-caused events. In addition, to installation of the concrete pole physical protection of the tower would be provided by a 14 foot by 8 foot by 10 foot chain link perimeter fence. The depth of ground disturbance for the pole foundation may vary at each site location due to soil stability but may reach a depth of seven (7) feet. Power would be supplied by solar panels braced or mounted on the ground. A direct Area of Potential Effect (APE) has been identified by FEMA as the footprint of the pole location and the footprint of the existing building. FEMA has not identified an indirect APE for audible, visual, or atmospheric effects. Although some of the proposed pole locations maybe within one-half mile of a National Register of Historic Places (NRHP) listed property, none are taller than 60 feet and do not meet the criteria established by the Federal Communications Commission (FCC) Nationwide Programmatic Agreement for determining potential visual effects on NRHP-listed properties since no poles are greater than two hundred (200) feet in height.

2) A description of the steps taken to identify historic properties, including, as appropriate, efforts to seek information pursuant to § 800.4(b)

A search of the National Register of Historic Places (NRHP) was performed. Other resources reviewed include Mariana Islands Training and Testing DEIS, and the Guam Register. In addition, the Applicant retained the services of an SOI qualified archaeologist to perform a pedestrian survey of each of the fifteen (15) proposed site locations. There are eighteen (18) National Register properties located within one-half mile or more of each individual site location for the proposed project.

3) The basis for determining that no historic properties are present or Affected

FEMA has made a finding of “no historic properties affected” pursuant to 36 CFR Part 800.4. Following is FEMA’s determination for each of the fifteen (15) proposed site locations:

1. The Agat Marina AHWS site is located just north of the Nimitz Beach Park on reclaimed land. The AHWS would be constructed on a paved area adjacent to the Marina

Office to the west and south of the ramp. The pedestrian survey revealed no historic properties present. The Agat Invasion Beach and Hill 40 are located more than one-half mile north from the proposed project site and the Laquet Complex is also more than one-half mile to the east and thus there would be no visual impact from the proposed tower.

2. The proposed location is adjacent to the Agat Senior Citizens Center in the middle of Agat Village within a developed area. Recently, a new power pole was erected at the proposed project site. The site has no trees and is mowed. The excavation for the new power pole was inspected by the Applicant's archaeologist during the pedestrian survey which contained no archaeological properties. The village contains no underground power lines but contains hundreds of power poles and the proposed AHWS tower would be installed adjacent to existing power poles. The proposed AHWS tower would not be a visual impact to any eligible or listed properties.

3. The proposed tower would be constructed in the middle of Asan Village in an area previously cleared and graded currently used as a temporary debris transfer station. The tower would be placed on an existing concrete slab adjacent to the Mayor's office. Vegetation consists of ironwood trees, bamboo tangantangan, coconut trees, and grass. No evidence of archaeological or historic properties was identified during the survey. The village has no underground power lines but contains hundreds of power lines along the roadways and residential areas. The proposed tower would not be visible to the War in the Pacific National Historic Park and Asan Invasion Beach as there are existing power poles and buildings obstructing the viewshed.

4. The Port Authority of Guam located within the commercial port of Cabras Island in Piti is the proposed tower location. The site is reclaimed land that has been developed. Large cranes, towers, fuel tanks, power poles and concrete buildings dominate the project location. The tower at this location would be installed atop and bolted to a concrete building constructed in the 1960's. FEMA has made a finding that the building is not eligible for listing to the National Register as it does not meet any of the criteria for listing pursuant to 36 CFR Part 60.4. No other NRHP properties are located within the APE.

5. Located approximately 100m east of Fort Soledad, Umatac is the proposed site for the tower installation. The pedestrian survey revealed that the proposed tower location is on top of a hill whose northern portion is a steep slope and its southern portion has been cut in preparation for the construction of an access road to the Fort. No cultural properties were identified at ground level and the subsurface deposit of resources is unlikely due to its location and uneven topography. No visual impact to Fort Soledad is anticipated as the area contains pre-existing power poles adjacent to the Fort and along the roadway. The AHWS would not be seen from the Fort because the tower would be placed behind tall ironwood trees growing between the Fort and the proposed project site.

6. The GWA Pump Station in Merizo is the proposed tower installation site. The area has been previously cleared and graded. The present ground surface is approximately three (3) feet lower than the original surface which was level with the elevation of the road

at one time. Vegetation consists of grass and vines. The pedestrian survey identified that the site was previously graded and dug up in preparation for construction of the pump station. No historic or archaeological properties were identified. The Merizo Conbento and Merizo Bell Tower are located one-half mile to the north of the project area but would not be visually impacted due to the presence of existing power poles, buildings, and thick vegetation between the NRHP properties and the proposed project site.

7. The Inarajan Elementary School is the proposed location for the tower. Specifically, it would be installed on a small hill located north to northeast of the school building. The area is consistently mowed and maintained. The area immediately adjacent to the installation has been cleared and graded to accommodate the construction of the school. The pedestrian survey did not reveal any historic or archaeological properties as the site was previously cleared, graded, and developed. However, the site is one-half mile to the north of the Inarajan Historic District. The District contains hundreds of power poles along the roadways and residential areas. In addition, the school yard contains numerous power poles. The AHWS may be seen from parts of the historic district but no visual effect is expected since poles currently exist within the District and the installation of the tower would not diminish the integrity of the District's location, design, setting, materials, workmanship, feeling, association, or use.

8. The proposed AHWS tower would be constructed at the JFK High School on the western portion near the athletic track and field. The area has been cleared and graded numerous times for the construction and improvement of the JFK track and field. No historic or archaeological properties were identified during the pedestrian survey. The nearest NRHP properties are located within one-half mile of the proposed tower installation site however there no visual effect is anticipated due to the existing power poles and large buildings along San Vitores Road and between the NRHP sites and the project site.

9. The AHWS would be installed north of the eastern "A" frame structure adjacent to the Pago Bay Bridge in Chalan Pago. The tower would be constructed at the edge of the inland side of the road within the government property which has been graded and filled as a result of the road construction. Power poles are lined up along both sides of the road at approximately 100 foot intervals. The AHWS would be sited adjacent to one of them. There are no listed NRHP within one-half mile of the proposed project however Pago Bay Beach and Pago Pillbox II are potentially eligible for listing. Pago Bay Resort development contained archaeological properties but the site has been surveyed and the data recovered. Pago Bay has no underground power lines and thus there are power poles lining both sides of the road. The proposed tower would have no effect to either Pago Bay Beach, Pago Pillbox II, or Pago Bay Resort.

10. The Talofofu Elementary School is the proposed location for the AHWS tower installation. The tower would be installed in the southwest corner of the fenced school grounds. No archaeological or historic properties were identified during the survey and there are no NRHP listed properties within one-half mile of the proposed tower site.

11. The AHWS tower located at the Tamuning Mayor's Office will be erected adjacent to an existing pole a few feet north of the Tamuning Tennis Courts. The area is highly developed and the survey identified no historic or archaeological properties. The nearest NRHP is located more than one (1) mile north of the proposed project area and the proposed tower would have no visual effect on them.

12. The UOG Research Station at Ija in the village of Inarajan is the proposed location for the AHWS tower. The station is an experimental facility for papaya, taros, corn, bananas, etc. The specific location for the tower installation is at the southwest corner of the fenced area that is being used for raising cattle. The pedestrian survey revealed no indication of prehistoric utilization of the area and no other archaeological or historic properties. The nearest NRHP is Aga Tongan Archaeological site located more than one (1) mile southeast of the proposed tower location. Due to differences in elevation, the Aga Tongan Archaeological site would not be visually impacted by the proposed 55 foot tower at more than one mile away.

13. The tower located at the Yona Mayor's Office will be placed at the southwest corner on a developed and well maintained area. No archaeological or historic properties were identified within the APE during the pedestrian survey. The closest NRHP is the Pago Bay Pillbox, the Ylig Bay Formation, and the Tocha Point Pillbox which are all more than ½ mile from the proposed project site. Due to differences in elevation these NRHP properties would not be visually impacted by the tower from this distance.

14. The AHWS would be located behind the Office of Civil Defense in the village of Agan Heights. The project site is a small open space just north of the back parking lot west of the Civil Defense Office building. The site inspection of the proposed tower location indicated that the area has been previously cleared and graded. There was no indication of archaeological or historic properties present within the APE. The closest NRHP properties located within one-half mile northwest and northeast of the tower location are Fort Apugan and Agana Formation, respectively. The tower would not result in a visual effect to the Agana Formation as it would be blocked by vegetation and buildings. There are several large trees between Fort Apugan and the proposed project location which would partially block the view of the AHWS. In addition, there are presently several existing power poles at the Fort.

15. The proposed location for the AHWS is directly across from the Nikko Hotel in Tumon. The site is a vacant lot that has been previously cleared and now only vegetated with tall grass. The actual location is approximately twenty-five (25) feet east of the edge of the road. A portion of the lot to the north had been temporarily used as a parking lot and to the south the area contains asphalt pavement. The pedestrian survey revealed that the area had been previously disturbed and that no archaeological or historic properties are present within the actual proposed project location. The nearest NRHP property is the Gun Beach Gun Emplacement located within one-half mile northwest of the AHWS site. However because of dense vegetation between the proposed site and the Gun Emplacement the AHWS would not be visible. In addition the area contains pre-existing

power lines and many of the power poles are located along the street and between the NRHP listed property.

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Eddie B. Calvo
Governor

Ray Tenorio
Lt. Governor

Department of Parks and Recreation
Government of Guam
490 Chalan Palasyo
Agana Heights, Guam 96910
Director's Office: (671) 475-6296/7
Facsimile: (671) 477-0997
Parks Division: (671) 475-6288/9
Guam Historic Resources Division: (671) 475-6294/5
Facsimile: (671) 477-2822



Raymond F.Y. Blas
Director

In reply refer to:
RC2013-0685

January 29, 2014



Donna M. Meyers, CEM/HPS
Deputy Regional Environmental Officer
Non-Disaster Grant Programs
FEMA Region IX
U.S. Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

Subject: Section 106 Review:
FEMA-2010-SS-T0-0044 (16625)
Guam Homeland Security
Homeland Security Grant Application to Install All Hazards Warning System (AHWS)

Dear Ms. Meyers:

We reviewed the documents provided to us regarding Guam Homeland Security's Grant application proposing to install an All Hazards Warning System (AHWS) at fifteen (15) various strategic locations throughout the island that were identified by the Government of Guam.

We concur with FEMA's determination of "no visual impact" but do not concur with "no historic properties affected" for the following four (4) proposed AHWS locations:

5. AHWS location-100m east of Fort Soledad, Umatac
6. AHWS location- GWA Pump Station, Merizo
9. AHWS location- north of "A" frame structure, Pago Bay Bridge, Chalan Pago
15. AHWS location- across from Nikko Hotel in Tumon

The four (4) AHWS locations stated above, may have the potential to encounter subsurface archaeological deposits, in which the appropriate determination would be "no adverse effect." Therefore, in order for us to concur with a "no adverse effect" determination, we are requiring a scope of work for Archaeological Subsurface Testing and Data Recovery for the four locations to be submitted to our office.

However, we concur with FEMA's determination of "no historic properties affect" and "no visual impact" for the remaining eleven (11) proposed AHWS sites as follow:

1. AHWS location-Agat Marina, north of Nimitz Beach Park, Agat
2. AHWS location-adjacent to Agat Senior Citizens Center, Agat village
3. AHWS location-adjacent to the Asan Mayor's Office, Asan village
4. AHWS location-Port Authority of Guam building, Cabras Island, Piti

7. AHWS location-small hill adjacent to the Inarajan Elementary School
8. AHWS location-western portion near the athletic track and field of JFK High School
10. AHWS location-southwest corner of fenced school ground, Talofoto Elementary School
11. AHWS location-near Tamuning Tennis Courts, Tamuning Mayor's Office
12. AHWS location-southwest corner of fenced area, UOG AG Research Station, Ija, Inarajan
13. AHWS location-southwest corner area of the Yona Mayor's Office
14. AHWS location-small open space behind Guam Homeland Security/Office of Civil Defense building, Agana Heights

In the event of inadvertent discoveries during any excavation for the eleven (11) AHWS sites, 36 CFR 800.13 Post review discoveries will be complied with.

If you have any question with regards to our review, please feel free to contact our office at (671) 475-6339.

Sincerely,



Raymond F. Y. Blas
Director



Lynda Bordallo Aguon
State Historic Preservation Officer



FEMA

March 4, 2014

Lynda Bordallo Aguon
State Historic Preservation Officer
Department of Parks and Recreation
Government of Guam
490 Chalan Palasyo
Agana Heights, Guam 96910

**Re: Installation of All-Hazards Warning System, EMPG 2010-SS-T0-0044
Guam DPR Reference RC2013-0685
Subgrantee: Guam Homeland Security, Office of Civil Defense**

Dear Ms. Aguon:

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) received your letter dated January 29, 2014, regarding FEMA's proposal to provide financial assistance to Guam Homeland Security (GHS), Office of Civil Defense, to install an All-Hazards Warning System (AHWS) at 15 locations throughout the island (Undertaking). Thank you for your timely response and for concurrence with FEMA's determination that the Undertaking would result in "no historic properties affected" at 11 of the proposed AHWS locations. FEMA considers its responsibilities under Section 106 of the National Historic Preservation Act fulfilled for the Undertaking at these locations.

Your office did not concur with FEMA's determination for the Undertaking at the following four proposed AHWS locations based on the potential for subsurface archaeological deposits:

- Site 5: 100 meters east of Fort Soledad in Umatac
- Site 6: Adjacent to the Guam Waterworks Authority pump station in Merizo
- Site 9: North of the eastern "A" frame structure at the Pago Bay Bridge in Chalan Pago
- Site 15: Across the street from the Nikko Hotel in Tumon

FEMA recognizes your concern that subsurface resources may be encountered during ground-disturbing activities at these locations. Your letter states that you would concur with a determination of "no adverse effect" to historic properties at these four proposed AHWS locations provided your office received an appropriate scope of work for archaeological testing and data recovery. Mr. Vic April, under contract to GHS, has prepared a proposed scope of work for archaeological testing and data recovery. A copy of this scope of work, dated February 20, 2014, is enclosed. In summary, GHS would be responsible for retaining the services of a professional archaeologist who meets the Secretary of the Interior's Standards for Archaeology to implement an archaeological testing and data recovery plan. The details of the proposed archaeological testing and data recovery plan are provided on pages 8 (last paragraph) through 10 of the enclosed scope of work. Based on your previous correspondence, FEMA has determined that, with GHS's implementation of the proposed archaeological testing and data recovery plan, the

Ms. Lynda Bordallo Aguon
March 4, 2014
Page 2

Undertaking at the four proposed AHWS locations would result in “no adverse effect” to historic properties.

FEMA respectfully requests your review and concurrence on these findings. FEMA may authorize funding for the Undertaking unless you notify FEMA of your objection within 30 days of receipt of this documentation. If you have any questions regarding this request, please do not hesitate to contact me at (510) 627-7033, morgan.griffin@fema.dhs.gov, or the letterhead address.

Sincerely,

A handwritten signature in dark ink, appearing to read 'G. Morgan Griffin', with a long horizontal flourish extending to the right.

G. Morgan Griffin
Deputy Regional Environmental Officer

Enclosure

Vic April, M.A.
Archaeological Consultant
191 Anthurium Street
Mangilao, Guam 96923

February 20, 2014

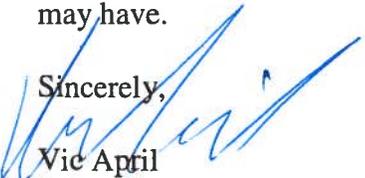
Raymond F.Y. Blas
Director
Department of Parks and Recreation
490 Chalan Palsyo
Agana Heights, Guam 96910

Subject: Scope of Work Archaeological Assessment for All Hazards Warning Systems Project

Dear Mr. Blas:

On behalf of the Guam Homeland Security, Office of Civil Defense I am submitting this Scope of Work for your review and comments. Please call me at 488-2802 for any questions that you may have.

Sincerely,



Vic April

Archaeological Consultant

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Vic April, M.A
Archaeological Consultant
191 Anthurium Street
Mangilao, Guam 96923

February 20, 2014

Raymond F.Y. Blas
Director
Department of Parks and Recreation
490 Chalan Palasyo
Agana Heights, Guam 96910

Subject: Scope of Work for Archaeological Assessment for All Hazards Warning Systems Project

Dear Mr. Blas:

On behalf of the Guam Homeland Security, Office of Civil Defense and Federal Emergency Management Agency (FEMA), Vic April, M.A. proposes to conduct archaeological subsurface testing and data recovery if warranted at four (4) All Hazards Warning Systems (AHWS) project sites (Fig.1). The four (4) AHWS locations around Guam are: Pago Bay just north of the west "A" frame structure, adjacent to Fort Soledad in Umatac, SD 16 GWA Pump Station in Merizo, and Hotel Nikko property directly across the street from Hotel Nikko in Tumon (Fig.2-5)

The purpose of the archaeological testing and data recovery is to find, describe, document, and collect significant cultural resources for analysis and reporting within each of the AHWS' Area of Potential Effect.

The proposed archaeological investigation for AHWS locations will comply with the Section 106 of the National Historic Preservation Act of 1966, as amended and its implementing regulations at 36 CFR Part 800.

All aspect of this archaeological investigation will be directed by a professional archaeologist meeting the Secretary of Interior's Standards for Archaeological documentation. Vic April, M.A. will serve as the principal investigator. Field Technician William Cabrera may be hired to assist in the field work.

The installation of the AHWS will include construction of a fifty five (55) foot high pole containing omni-directional high power voice and siren systems (Fig.17). The depth of the foundation for each AHWS may vary depending on the condition of the soil and which may reach as deep as seven feet below ground surface. Each AHWS will be confined to within a fourteen (14) foot long by eight (8) foot wide by three (3) foot high perimeter fence area.

Each AHWS may have the potential for visual impact to the National Register properties depending on each AHWS' location in relation to known sites. Therefore since the Federal



Fig. 1. Map of Guam showing the 4 All Hazards Warning Systems Locations



Fig. 2. Map showing project location.

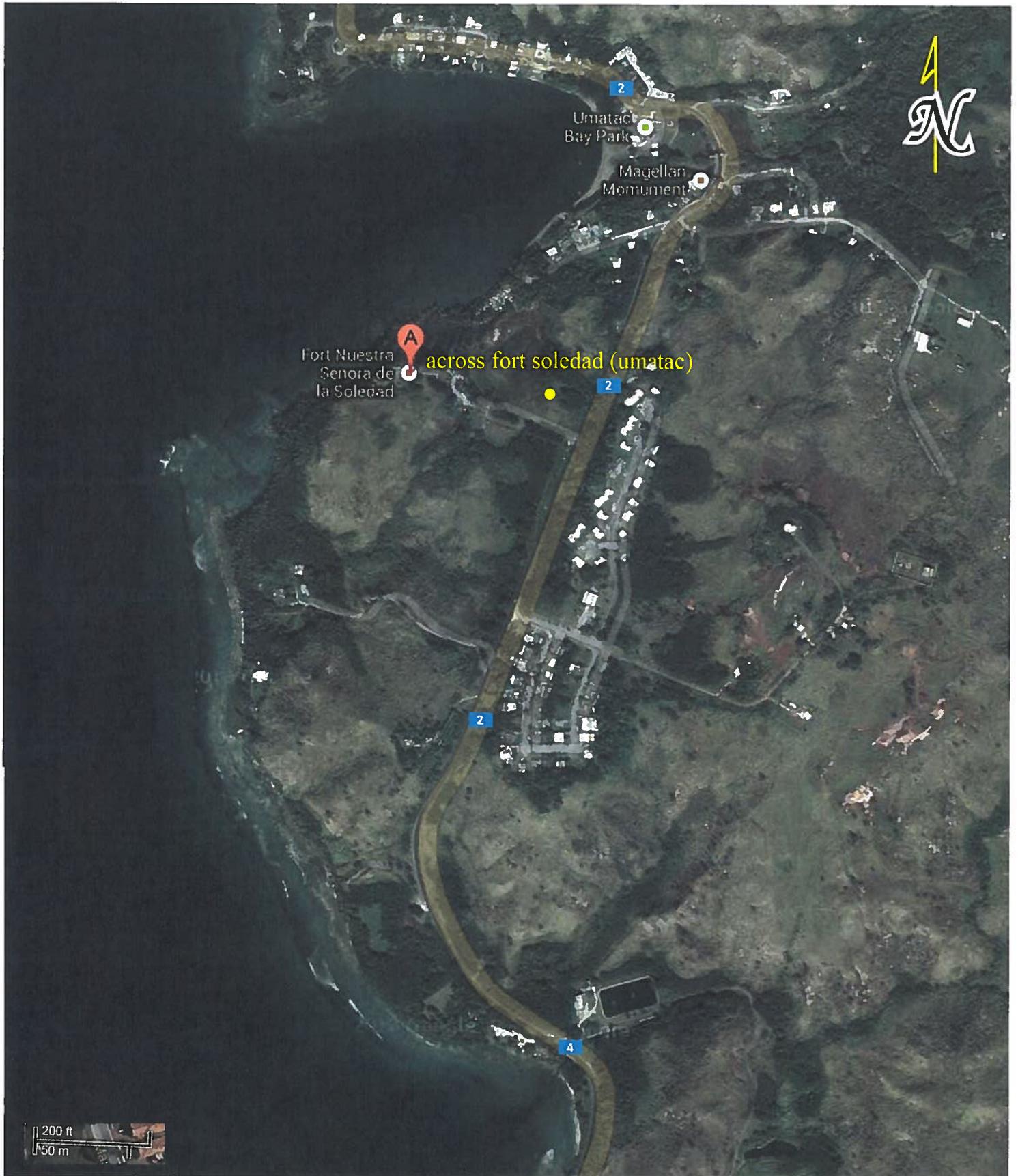


Fig. 3. Map showing the AHWS Location at Fort Soledad, Umatac



Fig. 4. Map showing the AHWS Location at sd16_GWA Pump Station



Fig. 5. Map showing the AHWS Location at Nikko Hotel property in Tumon.

WHELEN® 2906 6 Cell Siren

Mass Notification Warning System

Whelen's All-Hazard WPS2900 series omni-directional high-power voice and siren systems deliver clear, powerful voice and siren communication

System Features

- **WPS2906** - Six Omni-Directional Speaker Cells Assembled in a Vertical Column
- Three Compartment (Type III) Natural Finish Aluminum Cabinet
- 125dB @ 100'
- WPS2906 Speaker Cell Includes Six High Efficiency 400 Watt EZ-PULL™ Speaker Drivers
- 50' Cable Included
- Pole Top Mounting Bracket Included
- Public Address Capability
- Battery Powered, Minimum of 30 Minutes of Full Power Output with Batteries of our Recommendation
- AC Temperature Compensated 10 Amp Battery Charger
- Local Controls or Remote Controls
- Six Power Amplifiers
- Electronic Siren Controller
- Tone Generator
- Timer
- Local Control Push Buttons
- Battery Switch
- SI TEST™
- Battery Tray
- Lightning Arrestor
- Six Standard Public Warning Tones - Wail, Whoop, Attack, Hi-Lo, Alert, Airhorn

System Options

- **SBC280** - Solar Power ¹
- **WPSBATT** - Delco S2000 or Interstate Workaholic 31-MHD Batteries
- **WPSNCMIC** - Noise Canceling Microphone
- Alternate Tone Set
- **RDVM** - Digital Voice Message Capability ²

NOTES:

- 1 Solar power option includes 2 - 80 watt panels, mounting bracket and regulator
- 2 RDVM - 1-16 message capability with 240, 480 or 960 seconds available for recording

Siren Activation Controls

Our VHF High and UHF Wide Band siren activation control packages include the following:

- Radio
- Radio Interface
- Tone Squelch
- 2-3dB Gain Omni-Directional Antenna with Bracket
- 35' of RG58 Antenna Cable

- Polyphaser
 - SI TEST™
 - Low Battery Alarm (Two-Way only)
- Other features are dependant upon one or two way controls. Whelen equipment can be interfaced with many different types of two-way radio communications products and systems including 800Mhz trunking, Motorola's MOSCAD, FSK, Narrow-Band and VHF Low Band. The following is available as standard options. Contact factory for special applications.

One-Way Controls

- **AUXIN** - Auxiliary Board for Contact Closure Activation
- **D2020LL** - 10 Digit DTMF Landline Activation
- **D2020H** - 10 Digit DTMF VHF High Band / 150-170 Mhz
- **D2020U** - 10 Digit DTMF UHF / 450-470 Mhz
- **WPSSTT** - Two-Tone Sequential Option

Two-Way Controls

- **AUXCS** - Two-Way Contact Closure Activation and Status Board
- **C2020LL** - Two-Way Landline Activation
- **C2020H** - 10 Digit DTMF VHF High Band / 150-170 Mhz
- **C2020U** - 10 Digit DTMF UHF / 450-470 Mhz
- **C2020NH** - 10 Digit DTMF VHF High Band Narrow-Band
- **C2020NU** - 10 Digit DTMF UHF Narrow-Band

Options:

- **FSKXMOD** - Converts the Above Siren Activation Controls to FSK Format
- **STATUS** - Cabinet Window LED Status Indicator
- **PGINT** - Paging Interface to Interface Whelen Tones with Existing Paging Systems
- **INTRU** - Intrusion Alarm (available with two-way only)



Type III Electronic Cabinet

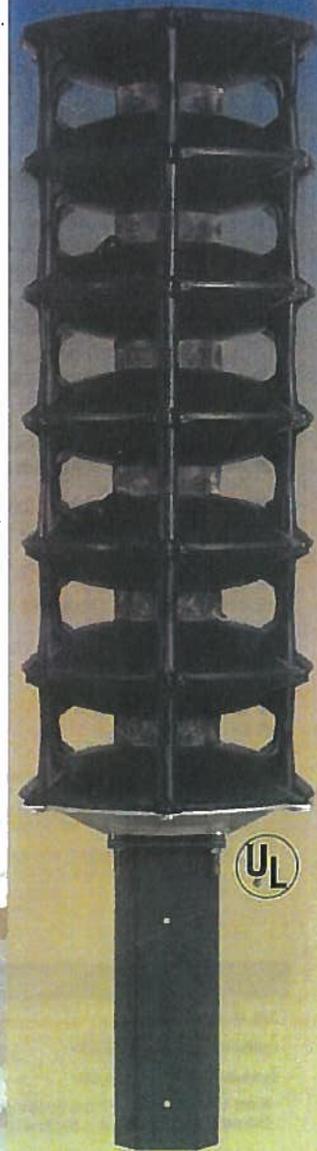


Fig. 6. Drawing showing AHWS Specifications

Communication Corporation (FCC) has an approved Nationwide Programmatic Agreement in place for all FCC applicants and consultants to follow for similar but a much larger scale projects, (antennas) it is proposed that Federal Emergency Management Agency and Guam Homeland Security will use this Nationwide Programmatic Agreement as a guide in determining potential visual effect of the AHWS on the National Register properties.

The threshold for consideration of visual effects for known sites in relation to the antenna locations as per the Nationwide Programmatic Agreement between FCC and its applicants and consultants are as follows:

- For towers two hundred (200) feet in height, the site should be within one half (1/2) mile from the tower location.
- For towers more than two hundred (200) feet but less than four hundred (400) feet high, the site should be within three fourth (3/4) of a mile from the tower location.
- For towers more than four hundred (400) feet in height, the site should be within one and one half (1 ½) miles from the tower location.

Although the AHWS project requires only fifty five (55) foot high pole which is a lot lower and smaller than FCC licensed antennas and other power poles, there are no precedence for adjustment of the height of smaller poles. The statute was written for poles up to 200 feet for a ½ mile visual effect therefore, the AHWS poles will use ½ of a mile distance for visual effect consideration.

The AHWS projects had the potential to affect archaeological resources depending on the location of each individual AHWS. Therefore inspection of each AHWS locations was conducted by an archaeologist to determine the presence or absence of cultural properties in every location. Those AHWS locations that were determined to have no potential for cultural properties had their Section 106 determination prepared and submitted to the Guam Historic Resources Division for concurrence and or comments. The determination letters included as a minimum the determination of the Area of Potential Effect, description of the AHWS location, description of the AHWS, appropriate maps, photographs, as well as the determination of visual effect on properties listed or eligible for the National Register of Historic Places.

A No Visual Effect determination for all AHWS locations around Guam had been concurred with by the Guam Historic Resources Division. Also, a “No Historic Properties Affected” for all AHWS locations had also been concurred except for AHWS locations at Pago Bay, across Fort Soledad, north of 16 SD Pump Station in Merizo and Hotel Nikko property in Tumon which will be further investigated.

It is proposed that a minimum of one (1) shovel test is excavated to determine the subsurface contents of each project location. If significant cultural deposits are identified during the shovel testing, a 1m x 1m square controlled excavation unit will be implemented within the discovery

area. The excavated soil will be screened through a one fourth (1/4) inch mesh wire to ensure maximum identification and recovery of artifacts. Recovered artifacts will be bagged according to their proveniences and collected for analysis. Pottery analysis will involve cleaning, sorting, counting, weighing, describing according to their attributes including surface treatment, such as mat impressions, combed or brushed, thickness, rim types, vessel forms, and any other unique characteristics observed on the shards. Shell analysis will involve cleaning, sorting, counting, weighing, and identification to the family and to some extent genus level. Artifacts such as pounders, adzes, sling stones, etc. will be described, measured and weighed. A ten (10) centimeter arbitrary level will be used in determining proveniences within natural layers. Only diagnostic artifacts will be collected. All shovel tests and controlled excavation units will be described and photographed with a scale showing the depth, photo board, and a north arrow. Wall profile of at least one wall of every shovel test and controlled excavation units will be drawn to scale.

If human remains are encountered during the shovel testing, all work shall immediately cease in the area of discovery and human remains are secured and the Guam Historic Resources Division (GHRD) is informed within twenty four (24) hours. At that time consultation among GHRD, FEMA, and Guam Homeland Security, and the project archaeologist will begin regarding the treatment of the human remains. Preservation in place is the preferred alternative for all significant cultural resources, however, if preservation is not feasible, mitigation alternative such as data recovery may be implemented which may involve a Memorandum of Agreement to ensure that the mitigation measures are carried out in accordance with the GHRD's Burial Guidelines and any pertinent GHRD's guidelines.

If cultural properties are identified, GHRD Data Forms will be prepared and submitted to GHRD along with the project report.

Seven working days after the completion of field work a Management Summary will be prepared and submitted to GHRD for review and comments. The management Summary will include an abstract, appropriate maps, drawings, photographs, field methods, field results, conclusion and recommendations.

If no significant cultural properties are identified during the investigation, an abbreviated report will be prepared and submitted to GHRD within sixty days from the completion of the fieldwork. The abbreviated report will include an abstract, table of contents, list of figures, maps, introduction, background research, field methods, field results, conclusion and recommendations, and reference cited.

If significant cultural properties are identified, a full technical report instead of an abbreviated report will be prepared and submitted to GHRD for review and comments within three (3) months from the completion of the fieldwork.

All comments from the GHRD will be properly addressed and incorporated in the final abbreviated or technical report. Two hard copies and an electronic copy will be submitted to GHRD. If Artifacts were collected for analysis, they will be turned over to the Guam Museum

after they have been analyzed and reported provided the Guam Museum is ready to accept artifacts for curation.



Eddie B. Calvo
Governor

Ray Tenorio
Lt. Governor

Department of Parks and Recreation
Government of Guam
490 Chalan Palasyo
Agana Heights, Guam 96910
Director's Office: (671) 475-6296/7
Facsimile: (671) 477-0997
Parks Division: (671) 475-6288/9
Guam Historic Resources Division: (671) 475-6294/5
Facsimile: (671) 477-2822



Raymond F.Y. Blas
Director

In reply refer to:

RC2013-0685

March 24, 2014

G. Morgan Griffin
Deputy Regional Environmental Officer
FEMA
U.S. Department of Homeland Security
Region IX
1111 Broadway, Suite 1200
Oakland, CA 94607-4052



Subject: Section 106
Undertaking: Installation of All-Hazards Warning System, EMPG 2010-SS-T0-0044
Subgrantee: Guam Homeland Security, Office of Civil Defense

Dear Mr. Griffin,

We received your letter dated March 4, 2014 for the above undertaking, including the Scope of Work for Archaeological Assessment plan prepared by Mr. Vic April that we approved March 7, 2014. In light of the plan's implementation by a qualified Archaeologist meeting the Secretary of the Interior's Professional Qualification Standards, we concur with FEMA's determination of "no adverse effect."

Should you require further assistance, please do not hesitate to contact us.

Sincerely,

Raymond F.Y. Blas
Director

Lynda Bordallo Aguon
State Historic Preservation Officer

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FEMA

June 18, 2014

Lynda Bordallo Aguon
State Historic Preservation Officer
Department of Parks and Recreation
Government of Guam
490 Chalan Palasyo
Agana Heights, Guam 96910

**Re: Installation of All-Hazards Warning System, EMPG 2010-SS-T0-0044
Guam DPR Reference RC2013-0685
Subgrantee: Guam Homeland Security, Office of Civil Defense**

Dear Ms. Aguon:

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) received your letter dated March 24, 2014, regarding FEMA's proposal to provide financial assistance to Guam Homeland Security (GHS), Office of Civil Defense, to install an All-Hazards Warning System (AHWS) at 15 locations throughout the island (Undertaking). Thank you for your timely response and for concurrence with FEMA's determination that the Undertaking would result in "no historic properties affected" at 11 of the proposed AHWS locations and, with implementation of the archaeological testing and data recovery plan approved by your office March 7, 2014, "no adverse effect" at 4 of the proposed AHWS locations.

Subsequent to receipt of your concurrence letter dated March 24, 2014, GHS has proposed to modify the location of Site 9 (north of the eastern "A" frame structure at the Pago Bay Bridge in Chalan Pago) because of possible impacts to biological resources at the original site. The original site was immediately west of Route 4, as shown in Figure 1; the new location is immediately east of Route 4, as shown in Figure 2. The direct area of potential effects (APE) for the new location is a triangular area of approximately 10 square meters bordered by retaining walls and the road, as shown in the photograph labeled Figure 3. No other changes to the Undertaking or the indirect APE, as described in FEMA's letter of January 6, 2014, would occur. The APE was subject to a pedestrian survey by Mr. Vic April, who meets the Secretary of the Interior's Standards for Archaeology; the survey was negative for cultural resources. Mr. April's survey suggests that the APE has been previously filled with soil. Nonetheless FEMA recognizes your concern that subsurface resources may have been encountered during ground-disturbing activities at the original location, directly across Route 4 from the new location. To ensure historic properties are not adversely affected at the new location, FEMA proposes that GHS would be responsible for retaining the services of a professional archaeologist who meets the Secretary of the Interior's Standards for Archaeology to implement an archaeological

Lynda Bordallo Aguon

June 18, 2014

Page 2

testing and data recovery plan in the same manner as was agreed for the original location. Based on previous correspondence, FEMA has determined that, with GHS's implementation of the proposed archaeological testing and data recovery plan, the Undertaking at the new Site 9 location would result in "no adverse effect" to historic properties.

FEMA respectfully requests your review and concurrence on these findings. FEMA may authorize funding for the Undertaking unless you notify FEMA of your objection within 30 days of receipt of this documentation. Because of FEMA's need to complete the Environmental Assessment for the project, FEMA and GHS would appreciate your expedited review of this request. If you have any questions regarding this request, please do not hesitate to contact me. I will be in Guam until June 24, 2014, and can be reached in care of Pilar Carbullido, Program Coordinator III, GHS, at (671) 475-9600, pilar.carbullido@ghs.guam.gov, or 221B Chalan Palasyo, Agana Heights, Guam, 96910. After June 24, 2014, you can contact me at (510) 627-7033, morgan.griffin@fema.dhs.gov, or the letterhead address.

Sincerely,



G. Morgan Griffin
Deputy Regional Environmental Office

Enclosures



Fig. 1. Map showing original project location



Fig. 2. Map showing project location.



Fig. 3. Photo showing project location.

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Eddie B. Calvo
Governor

Ray Tenorio
Lt. Governor

Department of Parks and Recreation
Government of Guam
490 Chalan Palasyo
Agana Heights, Guam 96910
Director's Office: (671) 475-6296/7
Facsimile: (671) 477-0997
Parks Division: (671) 475-6288/9
Guam Historic Resources Division: (671) 475-6294/5
Facsimile: (671) 477-2822

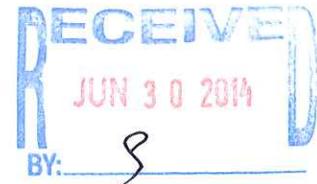


Raymond F.Y. Blas
Director

In reply refer to:
RC2013-0685

June 18, 2014

G. Morgan Griffin
Deputy Regional Environmental Officer
FEMA
U.S. Department of Homeland Security
Region IX
1111 Broadway, Suite 1200
Oakland, CA 94607-4052



Subject: Installation of All-Hazards Warning System, EMPG 2010-SS-T0-0044
Subgrantee: Guam Homeland Security, Office of Civil Defense

Dear Mr. Griffin,

We reviewed your request and concur with your determination for New Site 9 location - that it will result in "no adverse effect" to historic properties, and that the archaeological testing and data recovery plan would be implemented in the same manner as agreed to for the original location.

We appreciate the notification. Should you require further assistance, please do not hesitate to contact our office.

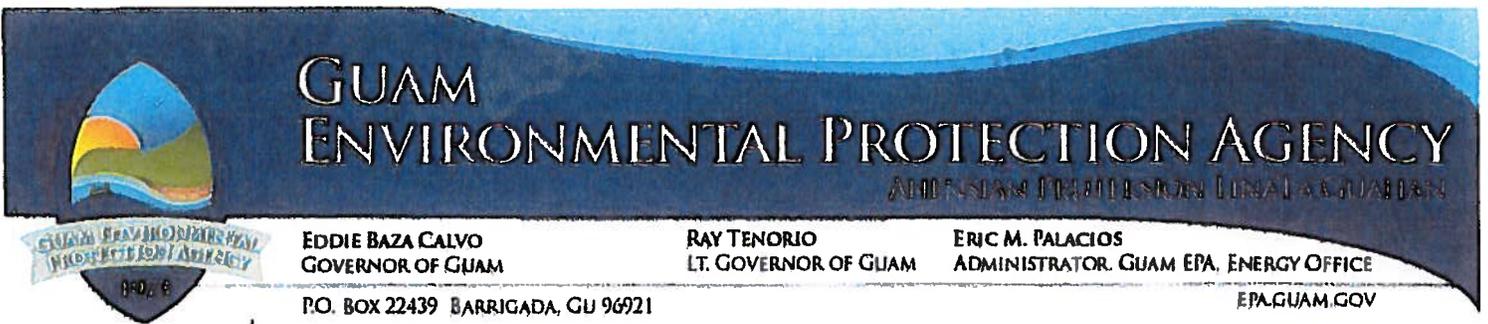
Sincerely,

Raymond F.Y. Blas
Director

for: Lynda Bordallo Aguon
State Historic Preservation Officer

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Guam Environmental Protection Agency (Guam EPA)



Nov. 13, 2013

Pat Leon Guerrero
Office of Civil Defense/Guam Homeland Security
221B Chalan Palasyo
Agana Heights Guam

RE: GEPA Investigative Findings at Asan-Maina Mayor's Office

Hafa Adai, Pat:

This letter is to memorialize the approval that was previously made through e-mail to your office on October 23, 2013, relative to the Guam Environmental Protection Agency's inspection of the Asan-Maina Mayor's Office compound for the purpose of erecting a tsunami alarm thereon.

Based on Guam EPA's inspection, the following are not considered to be hazardous waste:

1. Green waste — due to storm.
2. A few white goods — removed for some residents for safety issues.
3. Few pieces/parts of furniture.
4. Some metals.
5. Aluminum cans — will be donated to Southern High School.
6. About ten 5-gallon buckets of paint that were located on the compound prior to Asan-Maina Mayor Joanna Margaret Blas assuming office — deemed dried, non-hazardous.

Above items will be properly disposed of as soon as funding and other forms of assistance or resources become available to the Asan-Maina Mayor's Office.

The installation of the tsunami alarm may be made in or around the same area where the items listed above are located. Mayor Blas has indicated that, should this site be chosen to erect the tsunami alarm, proper cleanup of the site would be conducted.

If you have questions or need additional assistance, contact MiChelle Taitano at 300-4751-3, or through e-mail at: michelle.taitano@epa.guam.gov.

Si Yu'us Mar'ese,

A handwritten signature in blue ink, appearing to read "Eric M. Palacios", is written over the typed name.

ERIC M. PALACIOS
Administrator

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Public Announcement



Deadline for art contest submission extended

(CREATIVE INDEED) — The deadline for submission to the local art competition held by Creative Indeed and Guam Coffee Co. has been extended to March 21.

The contest is being held by the Creative Indeed and Guam Coffee Co., with the theme, "Plant the Seeds of Our Heritage Among Our Children."

Participating artists are required to submit an 8-inch by 10-inch artwork with a written description to Guam Coffee Co. (across the Pacific Islands Club in Tumon).

A selection committee will choose eight pieces, and the artists of these pieces will then be asked to recreate their work onto a 24-inch by 30-inch stretched canvas that will be featured in Guam Coffee Co.'s window panels. Guam Coffee Co. and Creative Indeed will then feature the artworks on their Facebook pages to allow for a people's choice vote to be considered for the winning piece. The winning piece will be chosen by a combination of the people's choice vote and the voting committee.

The winning piece will be announced and awarded a \$500 cash prize at the reception to be held at Guam Coffee Co. on April 26.

The contest is open to local residents of Guam of any age.

A voting committee will review all submissions for consideration. Eight final artworks will be selected based on alignment with the contest theme, originality, creativity, overall quality and skill, composition, and design.

The eight pieces chosen to be recreated to the larger canvas to be featured in Guam Coffee Co.'s windows will be chosen by the voting committee, as well as a people's choice vote taken by "likes" on the Facebook pages of both Creative Indeed and Guam Coffee Co. The voting committee will take heavy consideration toward the people's choice vote, but the people's choice vote may not guarantee the winner.

For questions, email Michelle Pierat info@creativeindeed.net or call 777-1284 or email Joe Santos at jsantos@guamcoffee.com.



GCC Adult Education students, from left, Brittney Meno, Jessica Pocaigue, Susan Mendiola, and Velmari Valenciano attend the Adult Education conference in the GCC MPA on March 6. Contributed photo

Adult education students learn about services

(GCC) — The Guam Community College Adult Education students learned just how many services are available to help them succeed in earning their high school diploma and in postsecondary education today, during GCC's annual Adult Education conference.

This year's theme, "Seeing into the Future," encouraged the students to explore career paths

and job opportunities.

The conference highlighted GCC's federally-funded adult education programs (Adult Basic Education, Adult High School, and English as a Second Language), its public-private partnership GED program, and GCC's admissions and registration process, and counseling, financial aid, and tutoring services. Breakout sessions encouraged

students to explore their career interests, learn how to create a resume and conduct themselves in a job interview, and learn about the WorkKeys program that can lead to a National Career Readiness Certificate. Several dozen students attended the conference, which was sponsored by GCC's Adult Education Office and College Access Challenge Grant Program.

Initial Public Notice

Guam All Hazards Alert Warning System

HSGP 2010-SS-T0-0044(16625)

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) intends to provide federal financial assistance through a Homeland Security Grant to the Guam Homeland Security to design and install an all hazards alert warning system. The fifteen sirens would be placed on concrete poles approximately 55-60 feet in height and/or on buildings scattered along the coastline island-wide. Several of the poles would be located in the coastal zone and the 100-year flood plain. Pursuant to Title 44, Code of Federal Regulations (CFR), Part 9 and Executive Order (EO) 11988 (Floodplain Management) and EO 11990 (Wetlands Protection), FEMA hereby provides interested parties with a notice of its intent to carry out an action within a floodplain.

If approved, the Guam Homeland Security would ensure that the proposal is implemented as proposed and adverse impacts would be minimized through best management practices and compliance with all permit requirements. The point of contact is Ms. Pilar C. Carbullido Program Coordinator III, Guam Homeland Security/Office of Civil Defense, 221B Chalan Palasyo Agaña Heights, Guam 96910, Telephone: 671.475.9600. Interested persons may also submit comments or obtain additional information by writing to Ms. Xushie Brue, Program Analyst, FEMA Region IX, 1111 Broadway, Suite 1200, Oakland, CA 94607, or email xushie.brue@fema.dhs.gov. All requests should be received no later than March 25, 2014.

EDUCATION

Volunteers Needed - Agueda I. Johnston Middle School has a clean up day on March 8th where they will be painting and beautifying the campus. If you would like to help, sign up as a Volunteer by contacting Carmencita at 472-6947 or 472-6785.

Essay Contest - The Guam Chamber of Commerce invites Guam students to participate in the 2014 Carabaos on Vacation Essay Contest to win cash prizes ranging from \$25 to \$250. Submit an essay about your favorite carabao icon, including the name of the carabao, facts about its design and significance to the business that adopted it and information about the sponsor. All entries must be submitted by April 11 to the Guam Chamber of Commerce in Hagåtña or the Guam Premier Outlets Information Booth. For contest rules and prize details, call 472-6311/8001, email info@guamchamber.com or visit www.GuamChamber.com.

Betel Nut Study - The University of Guam Cancer Research Center is seeking long-term betel nut chewers (10 years or more) to participate in the Betel Nut Oral Microbiome Study. Volunteers must be at least 18 years of age and meet prescreening criteria. Compensation will be provided. Call Katrina at 482-8200, Paul at 788-7879 or Yvette at 735-2441 for more information.

Junior Ranger Academy - The War in the Pacific National Historical Park will host a Junior Ranger Academy. Participants will have an opportunity to engage in fun activities that help them learn about the history of the park, the National Park Service, how to protect island resources, and ways to become future ambassadors of local parks

and national treasures. Junior Rangers will join park rangers in discovering underwater resources by snorkeling the park, helping restore bronze artwork at the Asan Bay Overlook, viewing WWII artifacts protected by the park. Youth in 7th and 8th grades are eligible to join but must register in order to participate. To sign up, download a registration packet at www.pacifichistoricparks.org or pick up a packet at the T. Stell Newman Visitor Center in Sumay next to the naval station main gate. Last day to submit a completed registration form and a \$20 refundable deposit is Friday, March 14. Space is limited. Junior Ranger programs will occur in two one-week sessions, from April 7-12 and April 14-19, 2014. Registered participants who complete all five of the programs will become Junior Rangers and receive an official Junior Ranger badge, t-shirt, and certificate. For more information, visit the T. Stell Newman Visitor Center in Sumay, email jracademy@pacifichistoricparks.org, or call 671-477-7278, extension 1015.

IFIT Scholarship Program - The Bank of Guam is accepting applications for its 2014 IFIT Scholarship Program, which makes \$2,000 available for five graduating high school seniors to attend a U.S.-accredited four-year college and includes a paid summer internship at the bank. Applicants must reside in Guam, the CNMI, Palau, Republic of the Marshall Islands, Federated States of Micronesia or San Francisco; be a high school senior (copies of transcripts and SAT/ACT scores required); submit application by March 14; submit three letters of recommendation; and submit answers to four essay questions. Applications are available at all Bank of Guam branches and all Guam high schools. Only originals will be accepted. For more

information, call Jackie Marati at 472-5258, or email jackie.marati@bankofguam.com.

Apply to AmeriCorps - The AmeriCorps-TATUHA Inc. Guam Volunteer Center is currently accepting applications for its part-time position. Interested applicants may contact Greg Calvo at 647-9820 or complete an application at the Tamuning Mayor's Office.

Bank of Guam Scholarship - The Bank of Guam is accepting applications for its 2014 IFIT Scholarship Program which makes \$2,000.00 available for five graduating high school seniors to attend a U.S. accredited four year college and includes a paid summer internship at the bank. Applicants must reside in Guam, the CNMI, Palau, Republic of the Marshall Islands, Federated States of Micronesia or San Francisco; be a high school senior (copies of transcripts and SAT/ACT scores required); submit application by March 14; submit three letters of recommendation; and submit answers to four essay questions. Applications are available at all Bank of Guam branches and all information call Jackie Marati at 472-5258 or email jackie.marati@bankofguam.com.

Volunteer Coordinators Needed - Island Girl Power is seeking volunteer coordinators before the end of the year to assist in the next phase of its program development. Interested individuals will work to strengthen the IGP mission. The team will also be adopted into IGP's Advisory Board Membership. The positions available include: Arts & Crafts Coordinator - Schedules instructors and art classes once a month for young girls ages 7-14 years of age. Performing Arts Coordinator - Schedules classes once or twice a month for young girls ages 7-14 years of age. Resulting in

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APPENDIX D

LIST OF KNOWN INTERESTED PARTIES FOR EA REVIEW

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Distribution List
Notice of Availability — Environmental Assessment
Guam AHAWS Placement
EMPG EMW-2012-EP-00021-(16625)

Federal Government

Loyal Mehrhoff, Field Supervisor
Pacific Islands Fish and Wildlife Office
United States Fish and Wildlife Service
300 Ala Moana Boulevard, Box 50088
Honolulu, HI 96850-5000
loyal_mehrhoff@fws.gov

James M. Munson, Environmental Protection
Specialist
Environmental Review Office
United States Environmental Protection Agency
Region 9
CED-2, 75 Hawthorne Street
San Francisco, CA 94105
munson.james@epa.gov

Michael Tosatto, Regional Administrator
Pacific Islands Regional Office
National Marine Fisheries Service
NOAA Inouye Regional Center
1845 Wasp Boulevard, Building 176
Honolulu, HI 96818
michael.tosatto@noaa.gov

Ryan Winn, Project Manager
Regulatory Branch
United States Army Corps of Engineers,
Honolulu District, Guam Field Office
PSC 455, Box 188
FPO AP 96540-1088 Guam
ryan.h.winn@usace.army.mil

Government of Guam

Charles Ada II, Executive Manager
Guam International Airport Authority
chuck.ada@guamairport.net

Lynda Bordallo Aguon, State Historic Preservation
Officer
Guam Department of Parks and Recreation
490 Chalan Palasyo
Agana Heights, GU 96910
lynda.aguon@dpr.guam.gov

Celestino Aguon, Chief
Guam Division of Aquatic and Wildlife Resources
tino_aguon@yahoo.com

Joanne Brown, General Manager
Port Authority of Guam
jbbrown@portguam.com

Tom Cruz, Acting General Manager
Guam Waterworks Authority
thomas@guamwaterworks.org

Carl Dominguez, Director
Guam Department of Public Works
carl.dominguez@dpw.guam.gov

Jon Fernandez, Superintendent
Guam Department of Education
jonfernandez@gdoe.net

Joaquin Flores, General Manager
Guam Power Authority
jflores@gpagwa.com

Eric Palacios, Administrator
Guam Environmental Protection Agency
eric.palacios@epa.guam.gov

Angel Sablan, Executive Director
Mayor's Council of Guam
mcogadmin@teleguam.net
angel.sablan@gmail.com

Robert Underwood, President
University of Guam
raunderwood@uguam.uog.edu

Private Sector / Individuals

Joe Blas, Operations Manager
Hotel Nikko Guam
jcbblas@nikkoguam.com

Masaaki Kawanabe, General Manager
Hotel Nikko Guam
m.kawanabe@nikkoguam.com

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