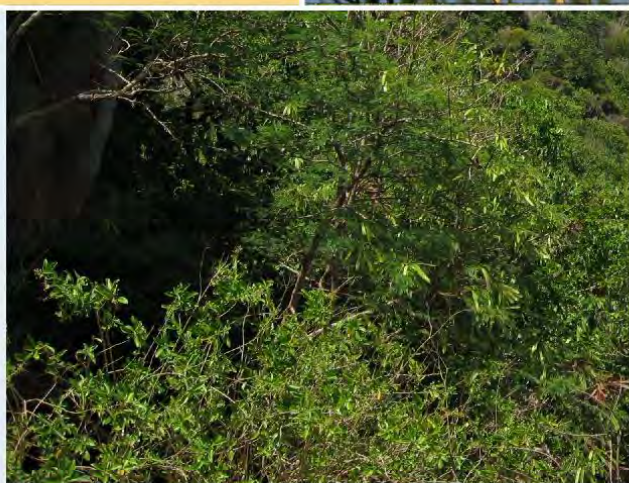
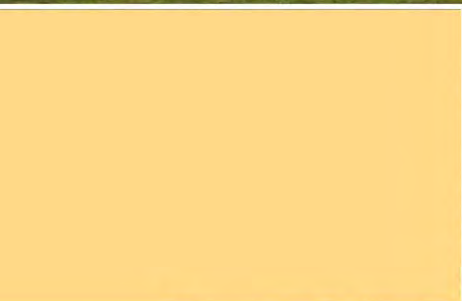


Final

**ENVIRONMENTAL IMPACT STATEMENT
FOR DIVERT ACTIVITIES AND EXERCISES,
COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS
VOLUME II: APPENDICES**



**Headquarters, Pacific Air Forces
Joint Base Pearl Harbor-Hickam, Hawai'i**



SEPTEMBER 2016

**FINAL ENVIRONMENTAL IMPACT STATEMENT
DIVERT ACTIVITIES AND EXERCISES
COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS (CNMI)**

VOLUME II: APPENDICES

TABLE OF CONTENTS

- A. COOPERATING AGENCY REQUESTS AND ACCEPTANCE LETTERS**
- B. BIOLOGICAL RESOURCES CONSULTATION SUPPORTING DOCUMENTATION**
- C. CZMA COMPLIANCE SUPPORTING DOCUMENTATION**
- D. NHPA SECTION 106 CONSULTATION SUPPORTING DOCUMENTATION**
- E. AIR QUALITY CALCULATIONS AND MODELING**
- F. AERONAUTICAL STUDY IN THE COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS**
- G. REVISED DRAFT EIS PUBLIC INVOLVEMENT AND COMMENTS**

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX A

Cooperating Agency Requests and Acceptance Letters



**Cooperating Agency Request Letter to the Department of the Navy and U.S. Marine Corps
September 20, 2011**



DEPARTMENT OF THE AIR FORCE
WASHINGTON DC

OFFICE OF THE ASSISTANT SECRETARY

20 SEP 2011

MEMORANDUM FOR DEPUTY ASSISTANT SECRETARY OF THE NAVY
(ENVIRONMENT)

FROM: SAF/IEE

SUBJECT: Cooperating Agency (CA) Request for the Proposed U.S. Air Force Environmental
Impact Statement (EIS) for Divert Activities and Exercises, Commonwealth of the
Northern Mariana Islands

The Air Force requests Navy and Marine Corps formal participation in preparation of its
Divert Activities and Exercises, Commonwealth of the Northern Mariana Islands EIS as prescribed
in the President's Council on Environmental Quality (CEQ) National Environmental Policy Act
(NEPA) Regulations, 40 CFR §1501.6, Cooperating agencies.

As a cooperating agency, the Air Force requests that you participate in various portions of the
EIS development as may be required. Specifically, the Air Force requests your support as a
Cooperating Agency by:

- (a) Participating in scoping, review, and hearing processes;
- (b) Making staff support available to enhance interdisciplinary analysis and review;
- (c) Assuming responsibility, upon request, for developing information and preparing analyses
on topics for which the Navy and/or Marine Corps has special expertise; and,
- (d) Responding, in writing, to this request.

Air Force staff will contact Navy and Marine Corps staffs to address specific details of this
cooperating agency relationship. To avoid unnecessary delays in the NEPA process, the Air Force
must have timely support from cooperating agencies. In turn, the Air Force will ensure it provides
the necessary information and related materials in a timely fashion to enable your agency to complete
its review and respond promptly. Should you or your staff have questions regarding this memo, our
points of contact are Mr. Jack Bush, Bases and Units (AF/A7C1), (703) 614-0237, email
jack.bush@pentagon.af.mil; and Mr. Les Reed, Office of the Deputy General Counsel (Environment
& Installations), (703) 614-8071, email les.reed@pentagon.af.mil.

A handwritten signature in cursive script, reading "Timothy K. Bridges", is positioned above the printed name.

TIMOTHY K. BRIDGES
Deputy Assistant Secretary
(Environment, Safety & Occupational Health)

cc:
SAF/IEI/GCN
HQ AF/A4/7/8
HQMC I&L & DC/A
HQ PACAF/A5/A7

**Cooperating Agency Request Letter to Department of Interior, Office of Insular Affairs
October 21, 2011**



**DEPARTMENT OF THE AIR FORCE
WASHINGTON DC**

OFFICE OF THE ASSISTANT SECRETARY

SAF/IEE
1665 Air Force Pentagon
Washington, DC 20330-1665

21 OCT 2011

Mr. Anthony Babauta
Assistant Secretary
U.S. Department of the Interior, Office of Insular Affairs
1849 C Street, NW
Washington, DC 20240

Dear Mr. Babauta:

The Air Force requests your formal participation in the preparation of an Environmental Impact Statement (EIS) for the Divert Activities and Exercises, Guam and Commonwealth of the Northern Mariana Islands as prescribed in the President's Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) Regulations, 40 CFR § 1501.6 *Cooperating Agencies*.

As a cooperating agency, the Air Force requests your office participate in various portions of the EIS development as may be required. Specifically the Air Force asks for your support as a Cooperating Agency by:

- a. Responding, in writing, to this request;
- b. Participating in the scoping process;
- c. Assuming responsibility, upon request by the Air Force, for developing information and preparing analyses on issues for which you have special expertise; and,
- d. Making staff available for interdisciplinary reviews.

To avoid unnecessary delays in the NEPA process, the Air Force must have timely support from cooperating agencies. In turn, the Air Force will ensure it provides the necessary information and related materials in a timely fashion to enable your agency to complete its review and respond promptly. Should you or your staff have any questions regarding this letter, our point of contact is Mr. Mark Petersen, (808) 449-1078, Mark.Petersen@hickam.af.mil.

Sincerely,

A handwritten signature in black ink, reading "Timothy K. Bridges", is written over a horizontal line.

TIMOTHY K. BRIDGES
Deputy Assistant Secretary of the Air Force
(Environment, Safety, & Occupational Health)

cc:
SAF/IEI
SAF/GCN
HQ USAF/A7C
HQ USAF/A3O
HQ PACAF/A7PI
ALCOM/J42

**Cooperating Agency Request Letter to Department of Interior, U.S. Fish and Wildlife Service
October 21, 2011**



**DEPARTMENT OF THE AIR FORCE
WASHINGTON DC**

OFFICE OF THE ASSISTANT SECRETARY

21 OCT 2011

SAF/IEE
1665 Air Force Pentagon
Washington, DC 20330-1665

Mr. Daniel M. Ashe
Director
U.S. Department of the Interior, U.S. Fish and Wildlife Service
1849 C Street, NW
Washington, DC 20240

Dear Mr. Ashe:

The Air Force requests your formal participation in the preparation of an Environmental Impact Statement (EIS) for the Divert Activities and Exercises, Guam and Commonwealth of the Northern Mariana Islands as prescribed in the President's Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) Regulations, 40 CFR § 1501.6 *Cooperating Agencies*.

As a cooperating agency, the Air Force requests your office participate in various portions of the EIS development as may be required. Specifically, the Air Force asks for your support as a Cooperating Agency by:

- a. Responding, in writing, to this request;
- b. Participating in the scoping process;
- c. Assuming responsibility, upon request by the Air Force, for developing information and preparing analyses on issues for which you have special expertise; and,
- d. Making staff available for interdisciplinary reviews.

To avoid unnecessary delays in the NEPA process, the Air Force must have timely support from cooperating agencies. In turn, the Air Force will ensure it provides the necessary information and related materials in a timely fashion to enable your agency to complete its review and respond promptly. Should you or your staff have any questions regarding this letter, our point of contact is Mr. Mark Petersen, (808) 449-1078, Mark.Petersen@hickam.af.mil.

Sincerely,

A handwritten signature in black ink, reading "Timothy K. Bridges", is written over a horizontal line.

TIMOTHY K. BRIDGES
Deputy Assistant Secretary of the Air Force
(Environment, Safety, & Occupational Health)

cc:
SAF/IEI
SAF/GCN
HQ USAF/A7C
HQ USAF/A3O
HQ PACAF/A7PI
ALCOM/J42

**Cooperating Agency Request Letter to Federal Aviation Administration
October 21, 2011**



**DEPARTMENT OF THE AIR FORCE
WASHINGTON DC**

OFFICE OF THE ASSISTANT SECRETARY

SAF/IEE
1665 Air Force Pentagon
Washington, DC 20330-1665

21 OCT 2011

Ms. Elizabeth L. Ray
Director, Airspace Services
Mission Support Services
Federal Aviation Administration
800 Independence Ave., SW, Suite 400 East
Washington, DC 20591

Dear Ms. Ray:

The Air Force requests your formal participation in the preparation of an Environmental Impact Statement (EIS) for the Divert Activities and Exercises, Guam and Commonwealth of the Northern Mariana Islands as prescribed in the President's Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) Regulations, 40 CFR § 1501.6 *Cooperating Agencies*.

As a cooperating agency, the Air Force requests your office participate in various portions of the EIS development as may be required. Specifically, the Air Force asks for your support as a Cooperating Agency by:

- a. Responding, in writing, to this request;
- b. Participating in the scoping process;
- c. Assuming responsibility, upon request by the Air Force, for developing information and preparing analyses on issues for which you have special expertise; and,
- d. Making staff available for interdisciplinary reviews;

To avoid unnecessary delays in the NEPA process, the Air Force must have timely support from cooperating agencies. In turn, the Air Force will ensure it provides the necessary information and related materials in a timely fashion to enable your agency to complete its review and respond promptly. Should you or your staff have any questions regarding this letter, our point of contact is Mr. Mark Petersen (808) 449-1078, Mark.Petersen@hickam.af.mil.

Sincerely,

A handwritten signature in black ink, reading "Timothy K. Bridges", is written over the typed name.

TIMOTHY K. BRIDGES
Deputy Assistant Secretary of the Air Force
(Environment, Safety, & Occupational Health)

cc:
SAF/IEI
SAF/GCN
HQ USAF/A7C
HQ USAF/A3O
HQ PACAF/A7PI
ALCOM/J42

**Cooperating Agency Response Letter from the Department of the Navy
November 4, 2011**



DEPARTMENT OF THE NAVY

OFFICE OF THE ASSISTANT SECRETARY
(ENERGY, INSTALLATIONS & ENVIRONMENT)
1000 NAVY PENTAGON
WASHINGTON DC 20350-1000

NOV - 4 2011

**MEMORANDUM FOR DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE
(ENVIRONMENT, SAFETY AND OCCUPATIONAL
HEALTH)**

SUBJECT: Cooperating Agency Request for the Proposed U.S. Air Force Environmental Impact Statement for Divert Activities and Exercises, Commonwealth of the Northern Mariana Islands

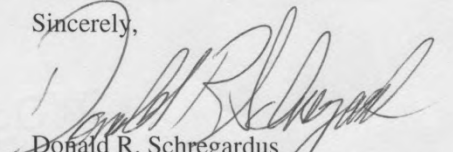
The Department of the Navy agrees to participate as a Cooperating Agency in the preparation of the U.S. Air Force Divert Activities and Exercises, Commonwealth of the Northern Mariana Islands Environmental Impact Statement (EIS). As a Cooperating Agency the Department of the Navy agrees to:

- Participate in scoping, review and hearing processes;
- Make staff support available to enhance interdisciplinary analysis and reviews;
- Upon request, develop information and prepare analyses on topics for which the Navy and/or Marine Corps has special expertise.

The Navy and Marine Corps points of contact to support this cooperating agency relationship are: Ms. Sue Goodfellow, Ph.D., Head, Planning and Conservation Section, Headquarters, U.S. Marine Corps (GF/MCI-COM), (571) 256-2781, email: sue.goodfellow@usmc.mil and Mr. Neil Sheehan, Environmental Planning Program Manager, Commander Pacific Fleet, (808) 474-7836, email: neil.a.sheehan@navy.mil.

The Department of the Navy appreciates being afforded this opportunity to participate as a cooperating agency and looks forward to working closely with the Air Force on this important environmental planning effort.

Sincerely,


Donald R. Schregardus
Deputy Assistant Secretary of the Navy
(Environment)

Copy to:
OPNAV N45
ADC I&L/GF

**Cooperating Agency Response Letter from the Federal Aviation Administration
November 15, 2011**



U.S. Department
of Transportation
**Federal Aviation
Administration**

NOV 15 2011

Timothy K. Bridges
Deputy Assistant Secretary of the Air Force
(Environment, Safety, & Occupational Health)
US Department of the Air Force
SAF/IEE
1665 Air Force Pentagon
Washington, DC 20330-1665

Dear Mr. Bridges:

Thank you for your letter requesting the Federal Aviation Administration participate as a cooperating agency in the environmental impact statement (EIS) for the Divert Activities and Exercises, Guam and Commonwealth of the Northern Mariana Islands.

The FAA is pleased to participate in the EIS process in accordance with the National Environmental Policy Act of 1969 as amended, and its implementing regulations. Since the proposal involves special use airspace (SUA), the FAA will cooperate following the guidelines described in the Memorandum of Understanding (MOU) between the FAA and the Department of Defense Concerning SUA Environmental Actions, dated October 4, 2005.

Modification of the SUA resides under the jurisdiction of the Western Service Center, Operations Support Group, Renton, WA. The Western Service Center will be the primary focal point for matters related to both airspace and environmental matters. Mr. John Warner is the Manager of the Operations Support Group. FAA Order 7400.2, Chapter 32 indicates the airspace and environmental processes should be conducted in tandem as much as possible; however, they are separate processes. Approval of either the aeronautical process or the environmental process does not automatically indicate approval of the entire proposal. I have enclosed Appendix 2, 3, and 4 of FAA Order 7400.2 for additional details.

A copy of the incoming correspondence and this response is being forwarded to Mr. Warner of the Western Service Center, Operations Support Group. Mr. Warner can be contacted at (425) 203-4500 for further processing of your proposal.

Sincerely,

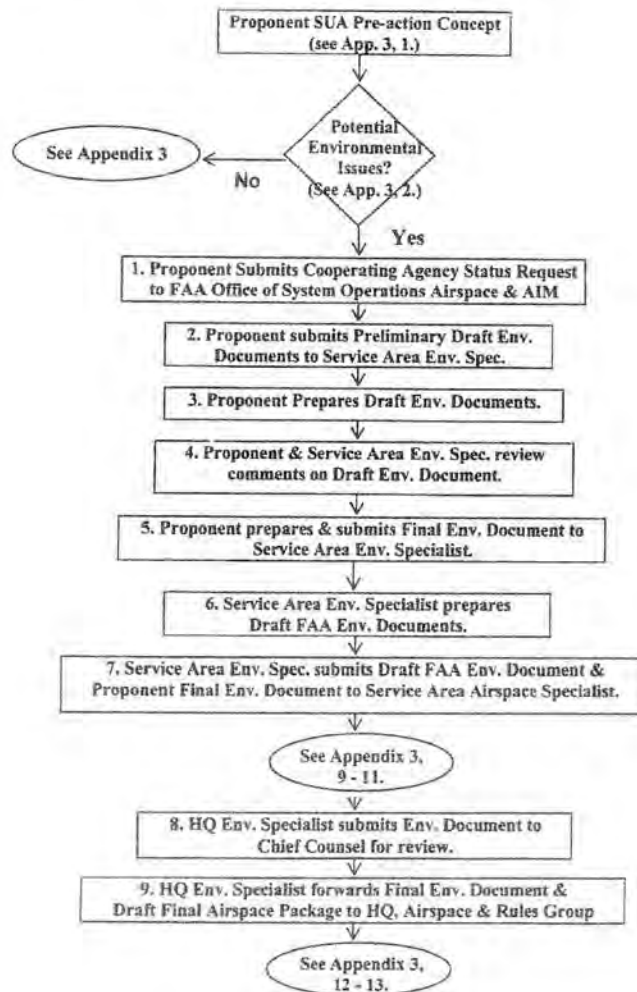
A handwritten signature in dark ink, appearing to read "Dennis E. Roberts".

Dennis E. Roberts
Director, Airspace Services
Air Traffic Organization

3 Enclosures

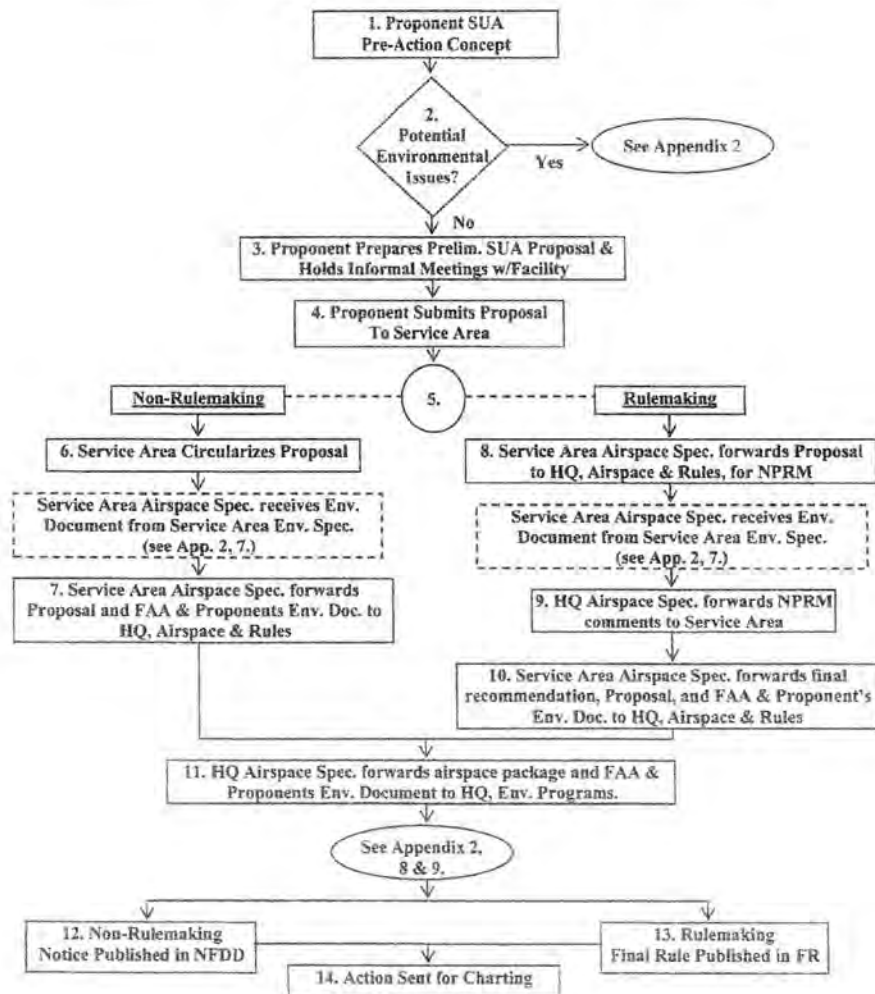
Appendix 2. Procedures For Processing SUA Actions Environmental Process Flow Chart

(This Chart is for use with Appendix 4 and the numbers correlate to the numbers in the Environmental column of that table.)



Appendix 3. Procedures For Processing SUA Actions Aeronautical Process Flow Chart

(This Appendix is for use with Appendix 4 and the numbers correlate to the numbers in the Aeronautical column of that table.)



Appendix 4. FAA Procedures for Processing SUA Actions Aeronautical and Environmental Summary Table

(The aeronautical and environmental processes may not always occur in parallel.)

(This Appendix is for use with Appendix 2 and Appendix 3, and the numbers correlate to numbers on those charts.)

(See note below.)

AERONAUTICAL	ENVIRONMENTAL
1. Proponent shall present to the Facility a Pre-draft concept (i.e., new/ revisions to SUA needed or required).	1. Proponent shall discuss with the Service Area, at the earliest time, the potential for environmental impacts associated with the proposal.
	2. If there is the potential for environmental impacts, Proponent shall make a request to the FAA for a Cooperating Agency (CA) status when Proponent decides to initiate the environmental process. Proponent shall forward the request to the Director of the System Operations Airspace and AIM. The Director will transmit the request to the Environmental Programs Group who prepares and forwards the response to Proponent. The Environmental Programs Group will send a courtesy copy of the response to the responsible Service Area. The Service Area environmental specialist works as the FAA point of contact throughout the process in development of any required environmental documentation.
	3. Proponent submits a Preliminary Draft EA or EIS to the Service Area environmental specialist. The Service Area environmental specialist shall provide comments, in consultation with the airspace specialist and the Environmental Programs Group, back to Proponent.

2. Proponent forwards the aeronautical proposal to the FAA Service Area for review and processing by the airspace specialist.	4. Proponent prepares a Draft EA or EIS with a 45-day public comment period. As the FAA CA point of contact, the Service Area environmental specialist reviews the associated draft environmental documentation to ensure that the Proponent addressed adequately all environmental concerns submitted on the Preliminary Draft. If required, the Service Area environmental specialist forwards the draft environmental documentation to the Environmental Programs Group for review and comment by the headquarters environmental specialist and the Office of Chief Counsel.
3. The Service Area airspace specialist, in accordance with this order, determines the type of airspace action(s) necessary, either Non-Rulemaking or Rulemaking. FAA Service Area and Proponent determine if informal Airspace Meetings are required.	
For Non-Rulemaking:	
4. The Service Area airspace specialist sends out a circularization with a 45-day public comment period. The Service Area airspace specialist reviews and prepares, in consultation with the Proponent, responses to the aeronautical comments from the study and circularization in accordance with Chapter 21 of this order.	5. The Proponent reviews comments received on their Draft EA/FONSI or EIS and prepares their responses to the comments, in consultation with the FAA and other cooperating agencies, if necessary, and in accordance with Chapter 32 of this order.
	6. Proponent prepares and submits their Final EA/FONSI or EIS/ROD to the Service Area environmental specialist.
	7. The Service Area environmental specialist prepares a Draft FAA FONSI/ROD or Draft FAA Adoption Document/ROD.
	8. The Service Area environmental specialist submits the Draft FAA FONSI/ROD or Draft FAA Adoption Document/ROD and the Proponent's Final EA/FONSI or EIS/ROD to the Service Area airspace specialist for inclusion with the airspace proposal package.
5. The Service Area airspace specialist then sends the completed package containing the aeronautical proposal, response to comments, Proponent's Final EA/FONSI, and the Draft FAA FONSI/ROD to the Headquarters Airspace and Rules Group with their recommendation.	

For Rulemaking:	
6. The Service Area airspace specialist sends the proposal to the Airspace and Rules Group who prepares a Notice of Proposed Rulemaking (NPRM). The Headquarters Airspace and Rules Group submits the NPRM for publication in the Federal Register with a 45-day comment period in accordance with Chapter 2 of this order.	
7. The Headquarters airspace specialist sends comments received on the NPRM to the Service Area airspace specialist for resolution.	
8. The Service Area airspace specialist then sends the completed package containing the response to comments, final service area recommendation, the proposal, Proponent's Final EA/FONSI or EIS/ROD, and the Draft FAA FONSI/ROD or Draft FAA Adoption Document/ROD to the Headquarters Airspace and Rules Group for preparation of the Final Rule.	
9. The Headquarters airspace specialist forwards the draft final rule package or draft non-rulemaking case summary (NRCS) with all supporting documentation to the Headquarters Environmental Programs Group for review (after all aeronautical comments have been resolved).	9. The Headquarters environmental specialist reviews the package for environmental technical accuracy; then submits the environmental documentation to the Office of the Chief Counsel, Airports and Environmental Law Division, for legal sufficiency review (having collaborated throughout the process).
	10. The Chief Counsel's environmental attorney's comments are incorporated into the final FAA environmental decision and signed by Headquarters Environmental Programs Group Manager. The package is then returned to the Headquarters Airspace and Rules Group.
10. For Non-rulemaking: The non-rulemaking action is published in the National Flight Data Digest.	
11. For Rulemaking: The Final Rule is published in the Federal Register. The Final Rule will contain a reference to the decision rendered and location of documentation for the associated environmental process.	

Consult the following documents throughout the process for further information:

- Council on Environmental Quality Regulations for Implementing the National Environmental Policy Act (NEPA), 40 CFR Parts 1500-1508
- FAA Order 1050.1E, "Environmental Impacts: Policies and Procedures"
- FAA Order 7400.2, "Procedures for Handling Airspace Matters," Part 5
- FAA Order 7400.2, Chapter 32, "Environmental Matters" and the associated appendixes (for specific SUA environmental direction)

NOTE: The time periods below are for a non-controversial aeronautical proposal and its associated environmental process. The time periods are for FAA review/processing only. Times for proponent and/or environmental contract support processing must be added.

ENVIRONMENTAL: The estimated time of completion for EA processing is 12 to 18 months or, for EIS processing, 18 to 36 months.

AERONAUTICAL (Non-Rulemaking): A minimum 4 months is required from submission of the Formal Airspace Proposal by the Proponent to the Service Area through completion of the circularization process. Additionally, a minimum of 6 months is required from submission of the Formal Airspace Proposal by the Service Area to Headquarters through completion of the charting process.

AERONAUTICAL (Rulemaking): A minimum 6 weeks for Service Area processing, and a minimum of 9 months to complete rulemaking once the formal package is received at Headquarters.



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:
2012-TA-0018

MAR 23 2012

Mr. Mark Petersen
HQ-PACAF, D-306/A7PI
25 E Street
JB Pearl Harbor-Hickam, HI 96853-5412

Subject: Request for the U.S. Fish and Wildlife Service (Service) to be a Cooperating Agency for the Divert Activities and Exercises, Guam and the Commonwealth of the Mariana Islands, Environmental Impact Statement (EIS).

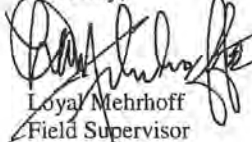
Dear Mr. Peterson:

This is in response to the letter dated 21 October, 2011, from Mr. Timothy Bridges requesting the Service to be a cooperating agency on the preparation of the subject EIS. Current staffing and workload constraints preclude our ability to accept this request, thus, we respectfully decline cooperating agency status.

The Service recognizes the importance of our collaboration in the development of the EIS, and in the section 7 consultation required under the Endangered Species (ESA) of 1973 (16 U.S.C. 1531 *et seq.*), as amended. The Service will continue to provide technical assistance with regard to biological surveys and impact assessment aspects of draft EIS documents, and to respond to Air Force requests for information. The Service will continue to work collaboratively with the Air Force and assist you with ensuring that the best available scientific information is used in the EIS, and that impacts to ESA-listed species and other natural resources are avoided and minimized.

If you have any questions or concerns regarding this consultation, please contact Rachel Rounds, Fish and Wildlife Biologist (phone: 808-792-9400, email: rachel_rounds@fws.gov).

Sincerely,


Loyal Mehrhoff
Field Supervisor

TAKE PRIDE®
IN AMERICA 

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX B

ESA Section 7 Consultation Supporting Documentation



APPENDIX B BIOLOGICAL RESOURCES CONSULTATIONS

TABLE OF CONTENTS

Section 7 Consultation with USFWS

Request for Terrestrial Section 7 Early Consultation/Meeting, July 7, 2011	B-1
Response to Request for Terrestrial Section 7 Early Consultation/Meeting, July 8, 2011	B-2
Biological Assessment for Headquarters Pacific Air Forces Divert Activities and Exercises in Saipan..	B-3
2013 Biological Opinion on the U.S. Air Force's Proposed Divert Activities and Exercises at the Saipan International Airport	B-61
Corrections to the 2013 Biological Opinion	B-107
USAF Letter to USFWS Requesting Concurrence with the Not Likely to Adversely to Affect Determination for Nesting Green and Hawksbill Sea Turtles, July 8, 2015	B-109
USFWS Letter to USAF Concurring with the Not Likely to Adversely to Affect Determination for Nesting Green and Hawksbill Sea Turtles, and that the Modified Saipan Alternative is Within Scope of the 2012 Divert BO, October 30, 2015	B-121

Section 7 Consultation with NMFS

USAF Letter to NMFS Requesting Concurrence with Not Likely to Adversely to Affect Determination for Marine Species, October 3, 2012	B-137
NMFS Letter to USAF Stating Concurrence with the Not Likely to Adversely to Affect Determination for Marine Species, October 30, 2012	B-143
USAF Letter to NMFS Requesting Concurrence with the Not Likely to Adversely to Affect Determination for Listed Corals, January 2016	B-147
NMFS Letter to USAF Concurring with the Not Likely to Adversely to Affect Determination for Listed Corals and the Scalloped Hammerhead Shark , March 2016.....	B-159

EFH Consultation

USAF Letter to NMFS Requesting Essential Fish Habitat Consultation, March 2016	B-165
Attachment 1 to USAF Letter to NMFS Requesting Essential Fish Habitat Consultation, March 2016	B-169

Attachment 2 to USAF Letter to NMFS Requesting Essential Fish Habitat Consultation,
March 2016 B-223

NMFS Letter to USAF Concurring with Minimal Adverse Impacts to Essential Fish Habitat,
April 2016 B-233

**Request for Terrestrial Section 7 Early Consultation/Meeting
July 7, 2011**

"Ingoglia, Mark Civ USAF PACAF A7AN/A7AN" <Mark.Ingoglia@hickam.af.mil>

07/07/2011 07:00 AM To
<Earl_Campbell@fws.gov>

cc

"Leong, Robert Civ USAF PACAF A7PI/A7PI" <Robert.Leong@hickam.af.mil>, "Duffy, Christopher G LtCol USAF PACAF A7/A7P" <christopher.duffy@hickam.af.mil>, "Grannis, William E Civ USAF PACAF A7/A7AV" <William.Grannis@hickam.af.mil>, "Hong, Julie Y CTR USAF PACAF A7PI/A7PI" <Julie.Hong@hickam.af.mil>

Subject

RE: FA8903-08-D-8771-0135: EIS for Divert Activities and Exercises USFW early consultation/meeting request

Aloha Earl,

The Air Force is preparing an EIS for the Pacific Air Force Divert Activities and Exercises in Guam and Commonwealth of the Northern Mariana Islands (CNMI) (hereinafter referred to as the "Divert EIS"). The purpose of the Divert EIS is to identify and assess the potential impacts associated with the proposed development and expansion of existing airfields in the Mariana Islands on U.S. territory in proximity of the Philippine Sea. As always, early and open discussions with your agency is the best way to accomplish this task in a timely manner.

The proposed airfield improvements would be designed to increase joint military exercises, humanitarian assistance, and disaster relief capability for northeast Asia. The USAF intends to meet its mission needs through expansion of an existing FAA-regulated airport which should minimize any potential effects on species of concern in the Marianas. The initial planning for this document is underway and I was hoping to meet with you and/or other members of the USFW staff to pre-brief you on this EIS. We anticipate pre-NOI notification of the Congressional delegations and the Governors of Guam and CNMI in mid-August and public scoping to be held on Guam and the three main CNMI islands in October 2011.

To assure we have touched base with your agency early (as always, it's an "aggressive schedule"), we are suggesting an initial meeting with the Air Force on or about 14 or 15 July 2011. I know you have been designated as the deputy for your office so I'm not sure you are the appropriate point of contact. Please confirm that you are appropriate contact for USFWS and let me know if your office can accommodate that schedule, or if an alternative date is preferred as travel arrangements will have to be made for whatever date is selected.

Thanks in advance,

mi

J. Mark Ingoglia, Chief
PACAF Environmental Branch
DSN 449-1077
808 449-1077

**Response to Request for Terrestrial Section 7 Early Consultation/Meeting
July 8, 2011**

-----Original Message-----

From: Earl_Campbell@fws.gov [mailto:Earl_Campbell@fws.gov]

Sent: Friday, July 08, 2011 1:45 PM

To: Ingoglia, Mark Civ USAF PACAF A7AN/A7AN

Cc: Duffy, Christopher G LtCol USAF PACAF A7/A7P; Hong, Julie Y CTR USAF PACAF A7PI/A7PI; Leong, Robert Civ USAF PACAF A7PI/A7PI; Grannis, William E Civ USAF PACAF A7/A7AV; Loyal_Mehrhoff@fws.gov

Subject: MTG 1 PM July 15 ? : EIS for Divert Activities and Exercises USFW early consultation/meeting request

Mark:

Could we meet on Friday, July 15th at 1 PM at the Pacific Islands Fish and Wildlife Office? I can get a conference room and a PowerPoint projector. Loyal Mehrhoff, my Field Supervisor, will try to attend the meetings. I'll be attending the meeting as well as several biologists who would be working on future regulatory review.

aloha,

earl w. campbell, ph.d,

assistant field supervisor, invasive species & marianas terrestrial issues

interagency brown treesnake working group coordinator

usfws - pacific islands fish and wildlife office

300 ala moana blvd., room 3 - 122

p.o. box 50088,

honolulu, hawaii 96817

808.792.9414 office phone

808.226.6076 cell phone

earl.campbell@fws.gov e-mail

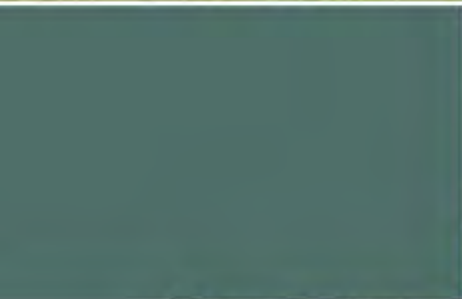
BIOLOGICAL ASSESSMENT

FOR

HEADQUARTERS PACIFIC AIR FORCES DIVERT ACTIVITIES AND EXERCISES IN SAIPAN



HEADQUARTERS, PACIFIC AIR FORCES
JOINT BASE PEARL HARBOR-HICKAM, HAWAII



ABBREVIATIONS AND ACRONYMS

ac	acre
AFB	Air Force Base
BA	Biological Assessment
BEAR	Basic Expeditionary Airfield Resources
cm	centimeter
CNMI	Commonwealth of the Northern Mariana Islands
dBA	A-weighted decibel
DNL	Day-Night Average Sound Level
DOD	Department of Defense
EIS	Environmental Impact Statement
ESA	Endangered Species Act
F.R.	Federal Register
GSN	Saipan International Airport (Federal Aviation Authority international airport code)
ha	hectare
lb	pound
kg	kilogram
km	kilometers
mi	miles
m	meters
PACAF	Pacific Air Forces
SUMB	Saipan Upland Mitigation Bank
USAF	U.S. Air Force
U.S.C.	U.S. Code
USFWS	U.S. Fish and Wildlife Service

**BIOLOGICAL ASSESSMENT
FOR
HEADQUARTERS PACIFIC AIR FORCES
DIVERT ACTIVITIES AND EXERCISES IN SAIPAN**

**HEADQUARTERS PACIFIC AIR FORCES (PACAF)
JOINT BASE PEARL HARBOR-HICKAM, HAWAI‘I 96853-5233**

AUGUST 2012

**BIOLOGICAL ASSESSMENT
FOR
PACIFIC AIR FORCE DIVERT ACTIVITIES AND EXERCISES
IN SAIPAN**

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS	INSIDE FRONT COVER
1. INTRODUCTION	1-1
1.1 SCOPE OF DOCUMENT AND PROJECT	1-2
1.2 PROTECTED SPECIES ADDRESSED	1-2
1.3 CONSULTATION HISTORY	1-3
2. PROJECT DESCRIPTION AND ACTION AREA	2-1
2.1 CONSTRUCTION	2-1
2.2 IMPLEMENTATION	2-8
2.3 ACTION AREA	2-12
2.4 IMPACT MINIMIZATION AND CONSERVATION MEASURES	2-13
3. STATUS OF THREATENED AND ENDANGERED SPECIES ON SAIPAN	3-1
3.1 NIGHTINGALE REED-WARBLER	3-1
3.2 MARIANA COMMON MOORHEN	3-2
3.3 MARIANA SWIFTLET	3-3
3.4 GREEN SEA TURTLE	3-4
4. ENVIRONMENTAL BASELINE	4-1
4.1 VEGETATION	4-2
4.2 WILDLIFE	4-4
4.3 SURVEYS FOR NIGHTINGALE REED-WARBLERS	4-6
4.4 SURVEYS FOR COMMON MOORHENS	4-6
5. EFFECTS OF THE ACTION	5-1
5.1 NIGHTINGALE REED-WARBLER	5-1
5.1.1 Impacts During Construction	5-1
5.1.2 Impacts During Implementation	5-5
5.1.3 Invasive Species	5-12
5.1.4 Cumulative Effects	5-12
5.2 MARIANA COMMON MOORHEN	5-13
5.3 MARIANA SWIFTLET	5-13
5.4 GREEN SEA TURTLES	5-13
6. CONCLUSIONS	6-1
7. REFERENCES	7-1

FIGURES

2-1.	Overview of Proposed Facility Locations at GSN	2-3
2-2.	Proposed Parking Apron, Hangar, and Maintenance Facility	2-5
2-3.	Proposed Temporary Munitions Storage Area	2-6
2-4.	Proposed Hazardous Cargo Pad and Arm/Disarm Pad.....	2-7
2-5.	Proposed Fuel Tanks and Site of the Basic Expeditionary Airfield Resources 550 Initial Housekeeping Set Kit.....	2-9
2-6.	Proposed Site Plan for Two Fuel Tanks at the Port of Saipan.....	2-10
4-1.	Vegetation Communities at GSN	4-3
4-2.	Areas surveyed at GSN in 2012	4-5
4-3.	Nightingale Reed-Warbler Territories Detected within Surveyed Areas at GSN, January–April 2012.....	4-7
5-1.	Proposed Project Facilities and Nightingale Reed-Warbler Territories	5-3
5-2.	Low Scenario Predicted DNL Noise Contours (dBA) During a Military Exercise at GSN (USAF 2012)	5-7
5-3.	Medium Scenario Predicted DNL Noise Contours (dBA) During a Military Exercise at GSN (USAF 2012)	5-8
5-4.	High Scenario Predicted DNL Noise Contours (dBA) During a Military Exercise at GSN (USAF 2012).....	5-9
5-5.	Predicted DNL Noise Contours (dBA) During a Military Exercise at GSN (medium scenario in USAF 2012)	5-10

TABLES

2-1.	Project Elements that Might be Constructed on Saipan	2-2
2-2.	Impact Minimization Measures Required by the Saipan Upland Mitigation Bank Biological Opinion.	2-13
5-1.	Amount of Vegetation Communities to be Removed for Construction of All Proposed Facilities at GSN (hectares [acres])	5-2
5-2.	Nightingale Reed-Warbler Territories at GSN, 2012	5-4

1. Introduction

The U.S. Air Force (USAF) proposes to improve the Saipan International Airport (hereafter referred to by the airport code GSN) and associated infrastructure to support expanding mission requirements in the western Pacific. After completing an analysis as required by the National Environmental Policy Act, the USAF would consider developing and constructing facilities and infrastructure at GSN to support a combination of USAF and joint cargo, fighter, and tanker aircraft and associated support personnel for divert landings, periodic exercises, and humanitarian assistance and disaster relief.

The purpose of the proposed project is to establish divert activity capabilities to support and conduct current, emerging, and future exercises, while ensuring the capability to meet mission requirements in the event that access to Andersen Air Force Base (AFB) on Guam or other western Pacific locations is limited or denied. For example, the need for humanitarian assistance can arise suddenly and without warning, such as disaster response in Japan during the 2011 earthquake and tsunami. If this were to occur during scheduled training exercises at Andersen AFB, training or response efforts might be delayed or impeded. Furthermore, natural or man-made disasters could impact Andersen AFB's missions, requiring reliance on designed and designated divert airfield capabilities. Because of the proximity to forward-deployed forces in the western Pacific, the Marianas provides the best alternative for forward-deployed U.S. forces to train on U.S.-owned lands and to develop the proposed additional divert capabilities.

The USAF and other services must achieve the missions mandated by Title 10 United States Code (U.S.C.) in the event of a disruption of operational capabilities at Andersen AFB or other western Pacific locations. To more assuredly achieve this mission, an additional location within the Marianas Archipelago must have the capabilities to sustain USAF missions on a temporary basis. Facilities and activities at GSN would not replace the capabilities at Andersen AFB, but would be an additional location on U.S. territory in the western Pacific that can help ensure continued military readiness should access to Andersen AFB or other western Pacific locations be limited or denied, such as during a training event, humanitarian assistance efforts, or natural or man-made disasters. The need for this project is derived from the following related operational requirements that are necessary to successfully support the mission of the Pacific Air Forces (PACAF):

- Ensure airfield accessibility if access to Andersen AFB or other western Pacific airfields is limited or denied
- Provide for contingency operations to include humanitarian assistance and disaster relief efforts
- Accommodate future increases in operational tempo and associated training
- Achieve and sustain readiness.

This project would develop critical enhancements at GSN to increase operational and divert capabilities needed by the USAF, especially in humanitarian assistance and disaster relief and joint exercises. These enhancements are required for the USAF to maintain a state of military readiness commensurate with the national defense and humanitarian assistance and disaster relief missions. This project focuses on the development and improvement of existing divert or contingency airfield capabilities and does not include the permanent deployment or "beddown" of forces in the Marianas. Hence, construction activities for the project are focused on improvements needed at GSN to increase USAF capabilities to respond to emergent needs, to ensure forces that are diverted from Andersen AFB or other western Pacific locations can continue to operate, and to train to these capabilities.

In summary, the proposed project is needed because there is not an existing divert or contingency airfield on U.S. territory in the western Pacific that is *designed and designated* to provide strategic operational and exercise capabilities for U.S. forces when needed and humanitarian assistance and disaster relief in times of natural or man-made disasters. Implementation of the project would support the PACAF mission to provide ready air and space power to promote U.S. interests in the Asia-Pacific region during peacetime, through crisis, and in war. For additional information on the purpose and need of the project, see the *Environmental Impact Statement (EIS) for Divert Activities and Exercises, Guam and Commonwealth of the Northern Mariana Islands* (USAF 2012).

1.1 Scope of Document and Project

The purpose of this Biological Assessment (BA) is to assess the potential effects of establishing divert capabilities and associated operations at GSN on terrestrial species listed as endangered or threatened under the Endangered Species Act (ESA) and their designated critical habitat. This BA addresses the potential impacts of improving facilities at GSN. It also addresses implementation of divert activities and exercises at the airport, including ground movements and immediate approaches and departures of aircraft at the airport during unit-level training and exercises. It does not, however, address actual air warfare and air logistics training (i.e., above 3,050 meters [m] (10,000 feet)) that would occur in the Mariana Islands Range Complex or elsewhere by aircraft temporarily operating from GSN. Those air warfare and training activities are described in the *Mariana Islands Range Complex Environmental Impact Statement/Overseas Environmental Impact Statement, May 2010* (DON 2010), and impacts on ESA-listed species from those activities have been addressed in Biological Opinions developed by the U.S. Fish and Wildlife Service (USFWS) (USFWS 2010a) and National Marine Fisheries Service (NMFS 2011).

The USAF has requested that this project be appended to the *Programmatic Biological Opinion Regarding the Reestablishment, Management, and Use of the Saipan Upland Mitigation Bank* (SUMB), Saipan (USFWS 2008a). This BA therefore considers and addresses the impact analyses methodologies and mitigation measures described in the SUMB Biological Opinion.

1.2 Protected Species Addressed

There are 16 species listed as threatened or endangered that occur or have occurred in the Mariana Islands archipelago (USFWS 2011a). Based on conversations with USFWS staff during informal consultation (see **Section 1.3**), the USAF has determined that six of those species could occur in terrestrial environments on Saipan: threatened Mariana fruit bat (*Pteropus mariannus mariannus*), endangered nightingale reed-warbler (*Acrocephalus luscini*), endangered Mariana swiftlet (*Aerodramus bartschi*), endangered Mariana common moorhen (*Gallinula chloropus guami*), endangered Micronesian megapode (*Megapodius laperouse*), and threatened green sea turtle (*Chelonia mydas*).

The Mariana fruit bat and Micronesian megapode are restricted to forested habitats, primarily on the northern part of the island (USFWS 1998a, 2009a). Land at and surrounding GSN where facilities would be developed and divert activities and exercises would occur has been cleared of native vegetation or is vegetated with second-growth forests dominated by tangantangan (*Leucaena leucocephala*). Due to lack of suitable habitat within the action area, and based on discussions with the USFWS in January 2012, systematic surveys for these species were not conducted for this project. However, during surveys of the action area conducted in 2012 for other rare species and to characterize avian populations (MES 2012), observers were vigilant for megapodes and flying and roosting fruit bats. Even though observation times of those surveys were favorable for detection of these species, no fruit bats or megapodes were observed or heard during any of the surveys. In addition, no optimal habitat was found in the areas surveyed of sufficient quality or quantity to support these species. Because these species are rare or do not occur on

the southern part of Saipan and there is no habitat for them within the action area, the USAF concludes that developing divert capabilities and conducting divert activities and exercises at GSN will have no affect on the Mariana fruit bat and Micronesian megapode, and those species are not discussed further in this BA.

In addition to the threatened green sea turtle, the endangered hawksbill sea turtle (*Eretmochelys imbricata*), leatherback sea turtle (*Dermochelys coriacea*), and olive Ridley turtle (*Lepidochelys olivacea*) can occur in the ocean surrounding Saipan. The USAF will consult with the National Oceanic and Atmospheric Administration Fisheries Service as required by the ESA to address impacts of their proposed project on those species in the marine environment, and those species are not addressed in this BA.

Six species classified as candidates for listing under the ESA occur in the Commonwealth of the Northern Mariana Islands (CNMI) (76 Federal Register [FR] 66370). Two of those species, the Mariana eight-spot butterfly (*Hypolimnas octocula mariannensis*) and humped tree snail (*Partula gibba*) might occur on Saipan. Although host plants used by the Mariana eight-spot butterfly (*Procris pedunculata* and *Elatostema calcareum*) occur on Saipan, this butterfly has not been detected there in recent years and it could be extirpated from the island (USFWS 2011b). The humped tree snail is known to occur on Saipan, but its preferred habitat of cool, shaded forests or other areas with high humidity (USFWS 2011c) does not occur within the upland areas that might be developed for the USAF's proposed project (MES 2012). Although a few scattered individuals of host plant species (e.g., papaya [*Carica papaya*], coconut palm [*Cocos nucifera*], hodda [*Ficus tinctoria*], and sumac [*Aidia cochichinensis*]) were found within the project survey areas during surveys conducted on and around GSN in 2012, Mariana eight-spot butterflies and humped tree snails were not detected and the host plants do not appear to be of sufficient abundance or have the characteristics necessary to support a population of either candidate species. It is therefore unlikely that the proposed project would have any adverse effect on these candidate species and they are not further discussed in this BA.

1.3 Consultation History

The following interactions between the USAF and USFWS related to this project have occurred.

- **July 14, 2011** – USAF and USFWS staff met in the USFWS office in Honolulu, Hawaii, to introduce the project, obtain a list of protected species that might occur in the project area, and discuss the consultation process.
- **July 15, 2011** – Staff from HDR, a contractor working for PACAF, requested of the USFWS information about the nightingale reed-warbler survey protocol and about the SUMB. The requested information was sent by USFWS staff on July 18.
- **September 7, 2011** – Staff from HDR requested copies of Biological Opinions for the SUMB and for activities at and near GSN. Those Biological Opinions were sent by USFWS staff on September 23.
- **January 5, 2012** – USAF and USFWS staff met in the USFWS office in Honolulu, Hawaii, to discuss plans for nightingale reed-warbler surveys and potential impacts on that and other species.
- **May 31, 2012** – USAF and USFWS staff met in the USFWS office in Honolulu, Hawaii, to discuss the results of surveys conducted for threatened and endangered species and the process for completing the consultation.
- **July 6, 2012** – USAF and USFWS staff met in the USFWS office in Honolulu, Hawaii, to discuss USFWS comments on the Draft EIS for this project.

- 1 • **July 19, 2012** – USAF submitted a draft of this BA to the USFWS for review.
- 2 • **July 27, 2012** – USAF and USFWS staff had a phone conversation to discuss USFWS comments
- 3 on the draft BA.
- 4 • **August 8, 2012** – USFWS provided by email additional comments on the draft BA.

2. Project Description and Action Area

This section describes the USAF plan to develop airfield operational capabilities at GSN, exercise divert and humanitarian assistance and disaster relief airlift staging capabilities, conduct joint military exercises, implement fueling and fuel storage, and develop billeting and other personnel requirements. This section also identifies the action area that could be directly or indirectly affected by developing divert capabilities and conducting divert activities and exercises on Saipan, and the measures that the USAF would take to avoid and minimize impacts on threatened and endangered species. Additional details about this proposed project are in the associated EIS (USAF 2012).

The USAF proposes to improve facilities and infrastructure at GSN to support a combination of USAF and joint cargo, fighter, and tanker aircraft and associated support personnel for divert landings, periodic exercises, and humanitarian assistance and disaster relief. Divert landings and humanitarian assistance and disaster relief would occur at the airport as required. The expanded facilities would be used on an as-needed basis and would not be used as a permanent full-time beddown or installation location.

GSN would be improved to an airfield design that can accommodate up to 12 KC-135 or similar aircraft. This airfield design would also accommodate other military cargo and tactical aircraft. Because the space required to accommodate large heavy lift cargo aircraft is approximately twice as large as what is required to support fighter and tactical aircraft, it is assumed that up to 24 fighter or tactical aircraft could be diverted to or exercised from GSN simultaneously, or a mix of fighter, tactical, and heavy lift cargo aircraft (e.g., 10 large cargo aircraft and 4 fighters) aircraft could be diverted to or exercised from GSN simultaneously as long as the mix does not exceed airfield design capabilities. The number of temporary support personnel accompanying the aircraft would not exceed 700, regardless of what mix of aircraft is diverted to or exercised from GSN.

2.1 Construction

To reduce strain on existing airport and commercial facilities and infrastructure, the USAF would construct and expand new facilities, rather than fully utilize existing facilities during the construction and implementation phases. These new facilities could include an expanded runway; associated pavement markings and lighting; parking aprons; temporary munitions storage area; hazardous cargo pad; an arm/disarm pad; aircraft hangar; maintenance facility; jet fuel receiving, storage, and distribution system; and navigational aids. Temporary billeting facilities could also be developed at the airport. The total size of these facilities, if they are all constructed, would be about 26 hectares (ha) (63 acres [ac]); 24 ha (59 ac) would be at GSN and 2 ha (4 ac) would be at the Port of Saipan (see **Table 2-1**).

The projected timeline for the completion of most or all construction is 24 to 36 months. However, the timing of construction would depend on the completion of a Safety Management Plan and agreement by the Federal Aviation Administration, Commonwealth Ports Authority, and commercial carriers.

Facilities at GSN and the Port of Saipan would be constructed in phases. The USAF currently plans to construct the bulk fuels tank, maintenance facility, and hazardous cargo pad in the first phase of construction, one or both parking aprons and the remainder of the airport fuel system in the second phase, and the fuel storage tanks at the Port of Saipan in a third phase. Depending on mission needs and Congressional authorization and appropriations, some project elements might not be completed on Saipan, or a smaller facility than listed in **Table 2-1** could be developed. For example, the USAF might decide not to extend one or both ends of the GSN runway, or might decide not to construct the entire parking apron. This BA addresses all project elements listed in **Table 2-1**; however, as described further in **Section 2.4**, the USAF would mitigate impacts separately for each project phase as projects are authorized and appropriated by Congress.

Table 2-1. Project Elements that Might be Constructed on Saipan

Project Element	Approximate Size hectares (acres)
Maximum Runway Extension	3.6 (8.9)
Parking Apron	8.9 (22.1)
Temporary Munitions Storage Area	0.4 (1.0)
Hazardous Cargo Pad and Arm/Disarm Pad	1.8 (4.5)
Aircraft Hangar	0.3 (0.8)
Maintenance Facility	0.04 (0.1)
Fuel Storage and Fueling Infrastructure - GSN	3.6 (8.9)
Fuel Receipt and Storage – Port of Saipan	1.8 (4.4)
Billeting	5.0 (12.3)
Total	25.5 (63.0)

Runway. The runway at GSN is 2,650 m (8,700 feet) long by 45 m (150 feet) wide and has two 8-m- (25-foot-) wide paved shoulders. To support operational requirements of the KC-135 and other cargo aircraft, the USAF could extend the runway to a total length of 2,850 or 3,070 m (9,350 or 10,075 feet). If the runway were to be extended to the maximum length, it would be lengthened by 220 m (725 feet) to the west and 200 m (650 feet) to the east. If extended to 2,850 m (9,350 feet), the eastern end of the runway would be lengthened by 200 m (650 feet); the western end would not be altered. For both options, the width of the runway would remain 45 m (150 feet) with 8-m- (25-foot-) wide paved shoulders, and would also include turnarounds. **Figure 2-1** shows a schematic site plan of the proposed airport additions, including the possible eastern and western runway extensions. The runway extensions would only be used for emergency take-offs and landings and would be striped (and marked) as “unusable” by all commercial (on a daily basis) and military aircraft (during exercises).

The runway extension(s) would have a 31-centimeter (cm) (12-inch) base and 36 cm (14 inches) of concrete. A substantial amount of structural fill would be required to extend the runway; that fill would be obtained from existing quarries or borrow pits on the island located approximately 6 kilometers (km) (4 miles [mi]) from the airfield. If existing quarries cannot provide all material necessary to expand the runway and construct other planned facilities, the quarry operator or USAF, as appropriate, would consult separately on the potential impacts on threatened or endangered species of expanding a quarry or opening and operating a new quarry.

Concrete needed to construct the runway and other elements would be mixed at existing locally contracted commercial facilities that operate concrete batch plants. Dry cement would be barged to Saipan using the supplier’s existing supply chain, and then trucked from the Port of Saipan to the commercial concrete facility where the concrete would be mixed. Mixed concrete would be trucked from the commercial concrete batch facility to GSN.

Pavement Markings, Lighting, and Navigational Aids. To accommodate a runway extension, the existing medium-intensity approach lighting system with runway alignment indicator lights would be replaced with a 730 m (2,400-foot) approach lighting system with sequenced flashing lights on the west end of the runway. The distance-remaining markers, runway end identifier lights, and precision approach

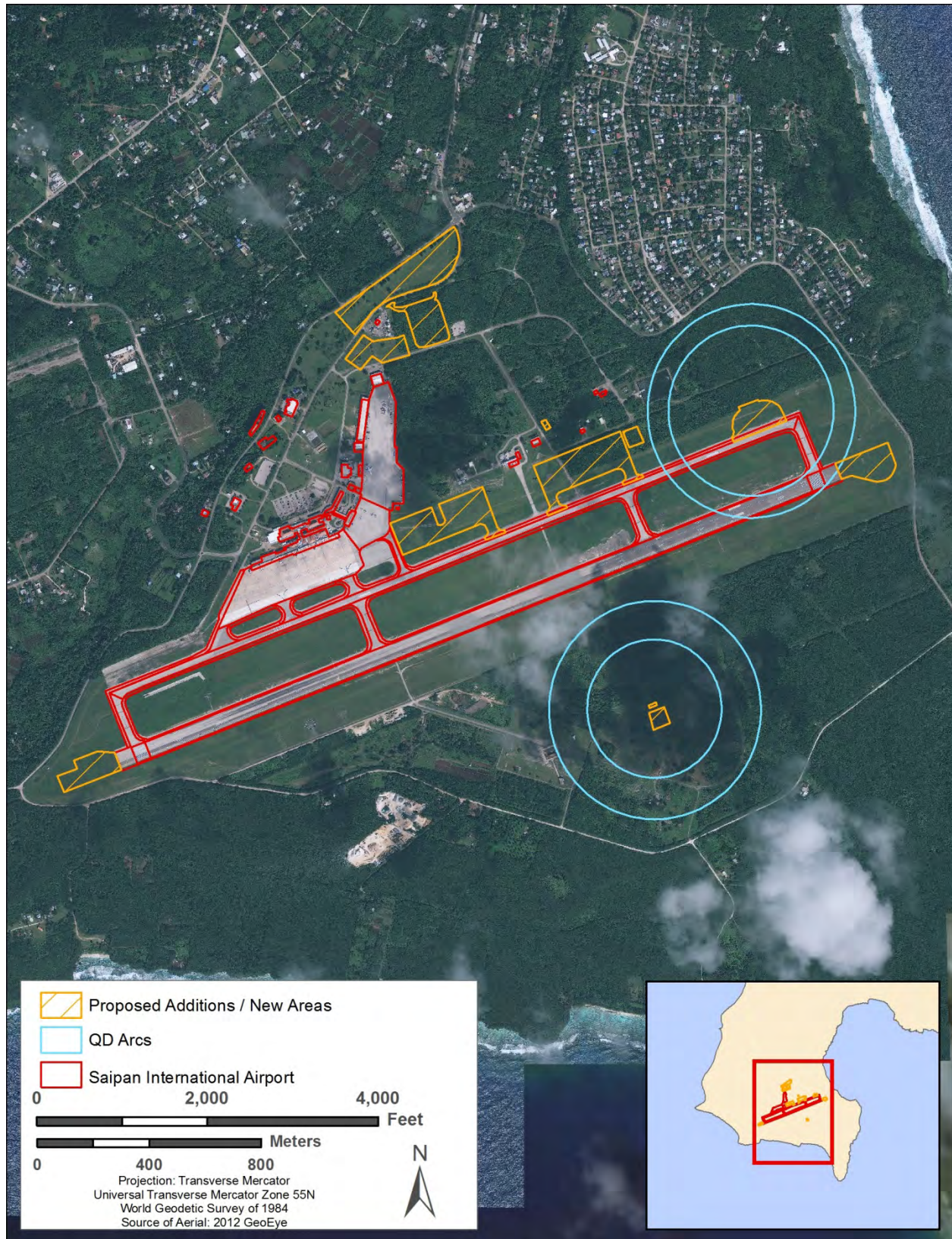


Figure 2-1. Overview of Proposed Facility Locations at GSN

path indicator systems also could be replaced and the middle marker and nondirectional beacon could need to be relocated. In addition, the glideslope and localizer would be relocated if the threshold locations are changed. The existing runway edge lights would be extended along the length of the proposed runway addition. All proposed lighting system improvements are in accordance with Unified Facilities Criteria 3-535-01, *Visual Air Navigation Facilities*.

Parking Aprons. To meet operational requirements, new ramp areas and parking aprons would be constructed adjacent to the GSN taxiway to accommodate up to 12 KC-135 aircraft. To avoid existing cultural resources, two separate parking aprons would be constructed adjacent to each other on the northern side of the existing taxiway (see **Figures 2-1** and **2-2**), with up to six KC-135 parking spots on each apron. The design strength would require a 31-cm (12-inch) base with 36 cm (14 inches) of concrete for the entire ramp expansion. Lights would be installed on the northeastern boundary to provide adequate security and operational lighting for night operations. Airfield lighting systems would include only the lighting facilities required to support the aircraft operational areas. Controls and equipment vault facilities would be included on the parking aprons as necessary to provide a complete and usable system.

Temporary Munitions Storage Area. A standard 7-Bar earth-covered magazine would be constructed to store munitions removed from diverted aircraft temporarily until the aircraft can return to its place of origin or planned destination. That magazine would be located approximately 535 m (1,750 feet) south of the centerline of the runway and 355 m (1,160 feet) east of the GSN Aircraft Rescue Training Area (see **Figure 2-3**). To adhere to minimum safety criteria and standoff distances in compliance with Department of Defense (DOD) Manual 6055.09-M, *Ammunition and Explosives Safety Standards*, and based on the 534-m (1,750-foot) distance between the magazine location and the nearest inhabited building (considered to be the runway centerline), the maximum quantity of munitions that could be stored in the magazine would be approximately 37,650 kilograms (kg) (83,000 pounds [lbs]) net explosive weight.

A multi-cube magazine also would be constructed as part of the temporary munitions storage area. The earth-covered magazine would be approximately 29 m (95 feet) by 11 m (35 feet) and the multi-cube magazine would be adjacent to the earth-covered magazine with a size of approximately 63 m (205 feet) by 63 m (207 feet). The existing road infrastructure that connects the aircraft rescue training area to the runway would be used as the primary munitions hauling route.

Hazardous Cargo and Arm/Disarm Pad. A hazardous cargo aircraft parking pad would be constructed and used to handle munitions and other hazardous cargo from diverted aircraft safely, and would also be used as an arm/disarm pad. To meet operational requirements and to adhere to minimum safety criteria and standoff distances in compliance with DOD Manual 6055.09-M, *DOD Ammunition and Explosives Safety Standards*, that pad would be located at the eastern end of the taxiway (see **Figure 2-4**) and the maximum net explosive weight stored there would not exceed 4,990 kilograms (11,000 pounds). The pad would be approximately 205 m (670 feet) by 113 m (370 feet) and would have a flow-through horseshoe design to allow aircraft to taxi directly onto and off of the hazardous cargo pad from the taxiway.

Aircraft Hangar. An aircraft hangar would be constructed adjacent to the parking ramp aprons (see **Figure 2-2**). This closed structure would be approximately 55 m (180 feet) by 60 m (195 feet), and would be located adjacent to the parking ramp and apron.

Maintenance Facility. A 1,830-square-m (6,000-square-foot) maintenance facility would be constructed north of the apron near an existing, pre-engineered building last used for commercial skydiving (see **Figure 2-2**). That facility would be used to support maintenance of aircraft and aircraft spares management. The facility would also be used to store pre-positioned equipment and materials needed for maintenance of aircraft used in exercises and humanitarian assistance and disaster relief efforts, including aerospace ground equipment and vehicles.



Figure 2-2. Proposed Parking Apron, Hangar, and Maintenance Facility

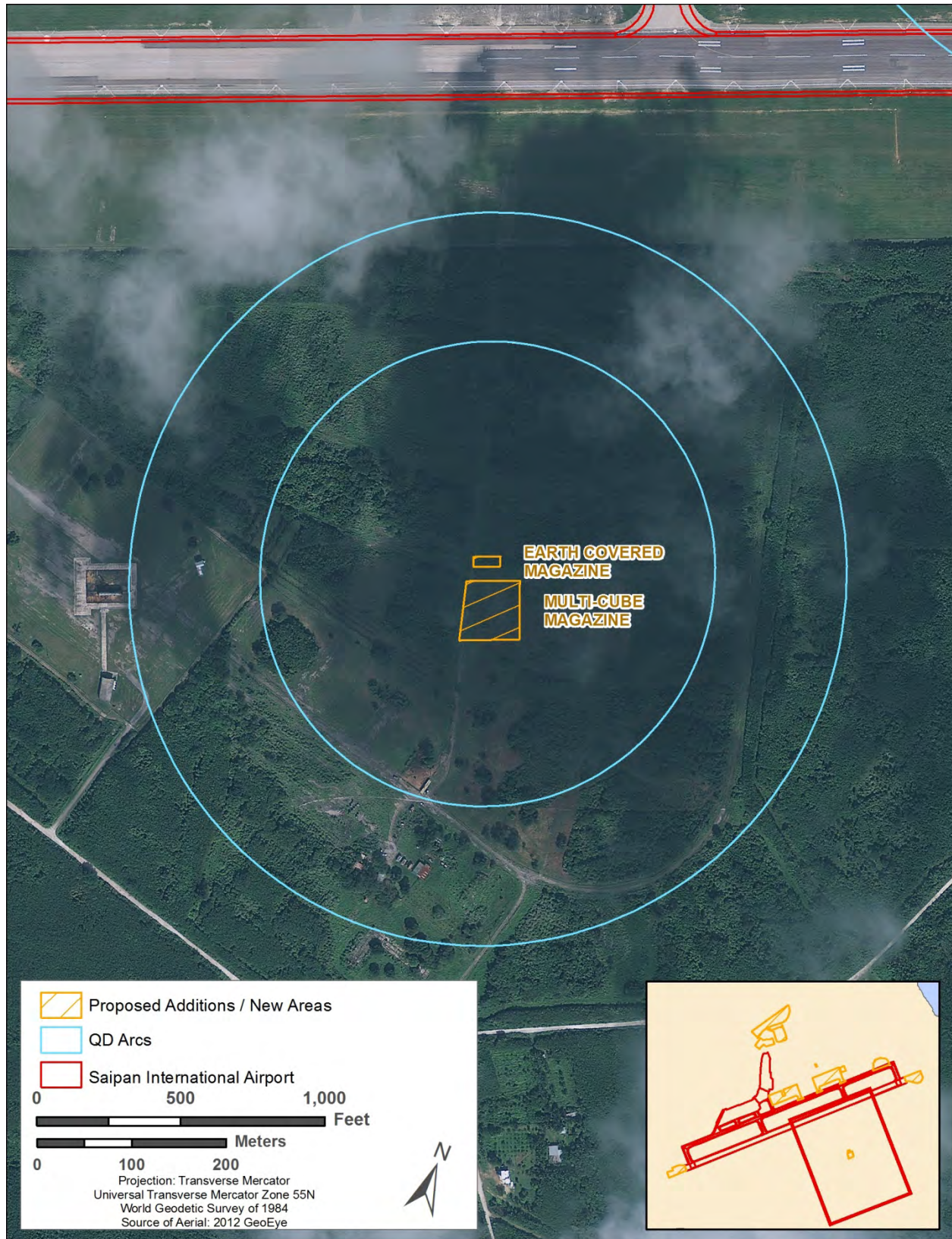


Figure 2-3. Proposed Temporary Munitions Storage Area

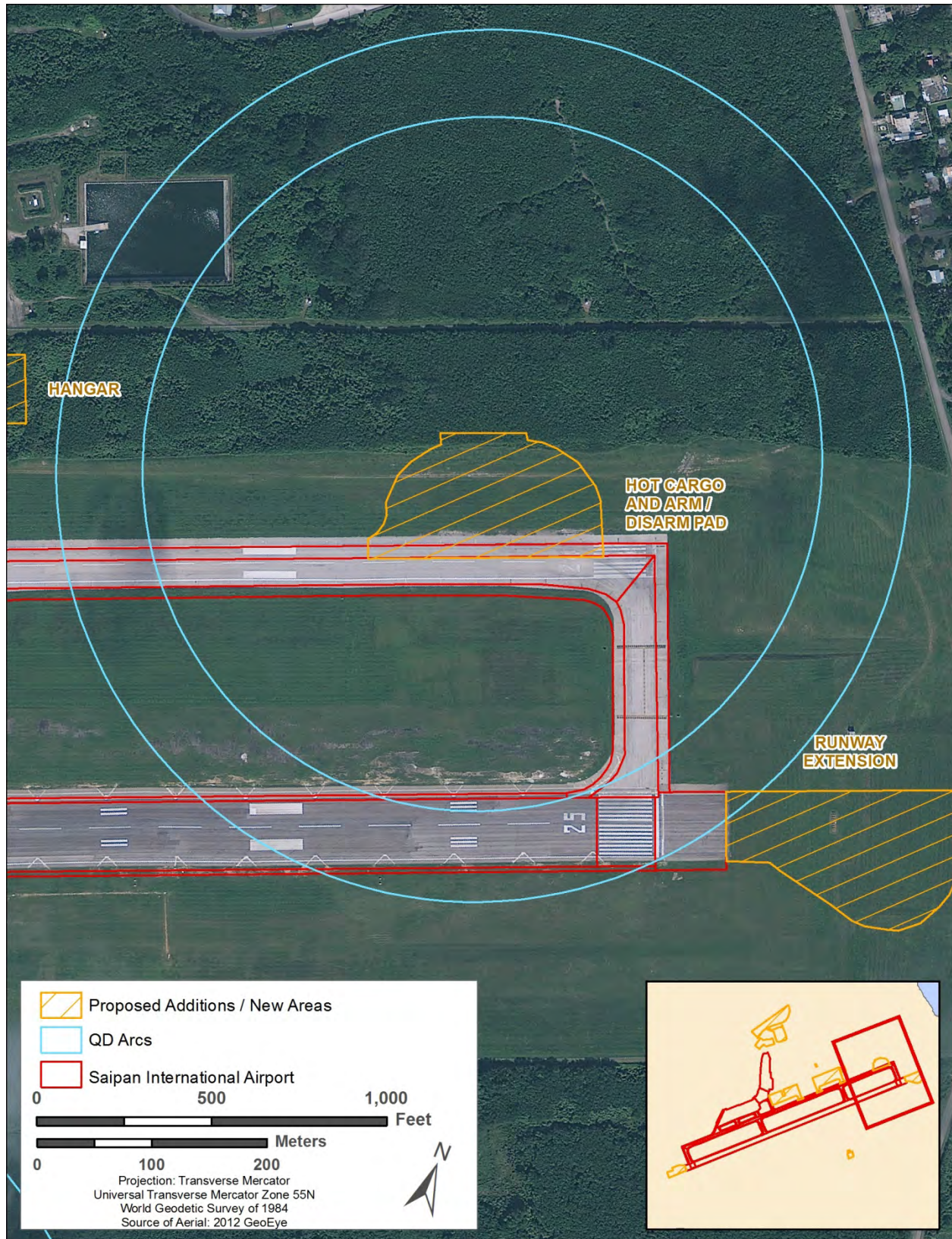


Figure 2-4. Proposed Hazardous Cargo Pad and Arm/Disarm Pad

Jet Fuel Receiving, Storage, and Distribution. The USAF plans to maintain a 30-day supply of jet fuel on Saipan. To maintain and deliver that amount of fuel, one DOD Standard Design 4.2-million-gallon, cut-and-cover or aboveground bulk storage tank and associated pumps, valves, filtration systems, emergency generator, and concrete work would be constructed to the north of existing airport facilities, and two 0.42-million-gallon, cut-and-cover or aboveground operating tanks also would be constructed near the bulk storage tank (see **Figure 2-5**). A transfer pumphouse, pumps, piping, filtration, valves, and a pantograph/hydrant servicing vehicle test station also would be installed near the storage tanks to support fuel storage and delivery.

Refueling capability for military aircraft would be provided at GSN using a combination of current capability and installing a standard DOD-designed 9,085 liters (2,400 gallons) per minute Type III hydrant refueling system adjacent to the new ramp. This refueling system would also tie into the existing commercial airport fuel supply line (with minimum disruption to commercial aircraft operations during construction periods) and the proposed parking apron expansion. One refueling hydrant would be installed at each of the planned KC-135 parking spots on the apron.

To support delivery of jet fuel on Saipan, two aboveground 2.1-million-gallon tanks with pump, filter, issue fill stand with two positions, and associated piping would be constructed near the seaport on federally leased land. The location is adjacent to the U.S. Army Reserve Center between Beach Road and Middle Road, inland from the existing commercial fuel storage area (see **Figure 2-6**). Existing infrastructure at the port would be used to offload fuel from vessels.

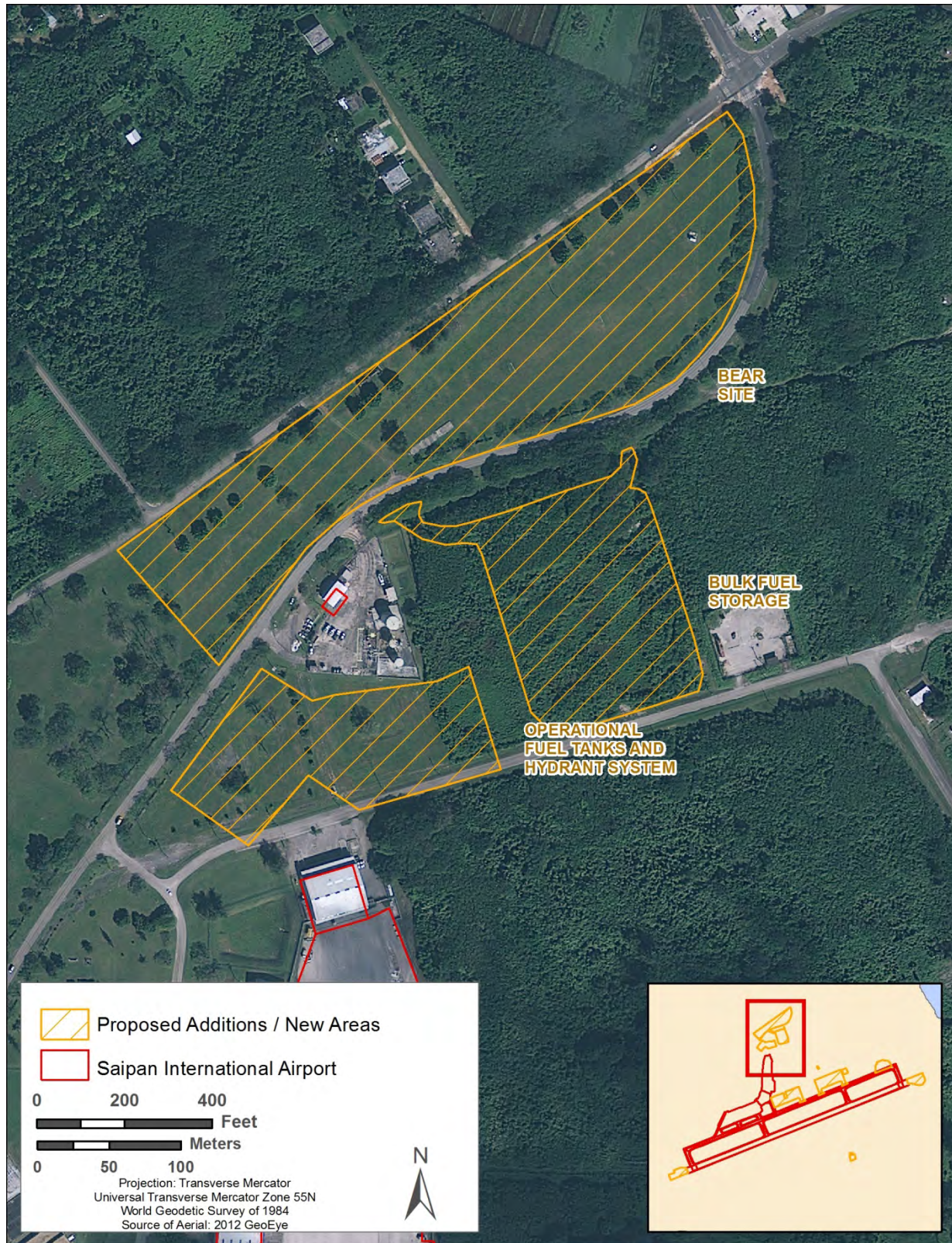
Billeting. Temporary billeting, including medical, transportation, and dining services, would be required for up to 700 personnel supporting aircraft operations during a divert landing, humanitarian assistance and disaster relief airlift, or joint military exercise event. The USAF plans to accommodate support personnel either by using commercial lodging on Saipan or temporarily installing a Basic Expeditionary Airfield Resources (BEAR) 550 Initial Housekeeping Kit.

If the USAF were to use commercial lodging, no additional construction or improvements would be needed at GSN. If the USAF were to use a BEAR kit for billeting, the kit would be established at GSN in accordance with Air Force Handbook 10-222 Volume 2 *Guide to Bare Base Assets*. The proposed area for the BEAR kit is approximately 5.0 ha (12.3 ac) and would require minimal vegetation clearing as it is located in a previously cleared and disturbed field (see **Figure 2-6**).

2.2 Implementation

After completion of construction, the USAF would use GSN periodically and temporarily for ground and air activities, aircraft support activities, and other airfield ground activities. A mix of joint cargo, tanker, fighter, and other aircraft could be diverted to or exercised from the airfield. Activities conducted there might include, but are not limited to, divert landings and take-offs, joint military exercises, jet fueling and storage, humanitarian assistance and disaster relief airlift staging including non-combatant evacuation operations, and billeting.

Divert Landings. Unscheduled aircraft landings, also known as “divert” landings would occur at GSN when other locations in the western Pacific, for example Andersen AFB, are unavailable for landing, such as during emergencies or natural disasters. Two types of unscheduled landings could occur there: divers resulting from malfunctioning aircraft or similar emergency situations in the air, and divers caused by natural or man-made disasters or activities at the airfield on the ground. Emergency divert landings, in accordance with the 36th Wing Instruction 13-204, would occur on an as-needed basis when an aircraft has malfunctioned or needs to land immediately due to an emergency. Other unscheduled divers would



**Figure 2-5. Proposed Fuel Tanks and Site of the Basic Expeditionary Airfield Resources
 550 Initial Housekeeping Set Kit**



Figure 2-6. Proposed Site Plan for Two Fuel Tanks at the Port of Saipan

1 occur when the scheduled or planned location for landing is no longer accessible or operational, such as
2 during typhoons, earthquakes, or other natural or man-made disasters. During a divert event when the
3 scheduled or planned location for landing is no longer accessible or operational, the aircraft could
4 continue to operate from the divert airport for up to 30 days until a more permanent home base is
5 established. Aircraft conducting divert landings at the airfield could require refueling, maintenance,
6 temporary munitions download and storage, and billeting support.

7 **Humanitarian Airlift Staging.** Humanitarian airlift staging, including non-combatant evacuation
8 operations, would occur at GSN in the event of an emergency or disaster. Examples of this type of
9 operation include Operation Tomodachi, the DOD relief effort implemented following the
10 2011 earthquake and tsunami in Japan and Operation Fiery Vigil following the 1991 eruption of Mount
11 Pinatubo in the Philippines resulting in the evacuation of 20,000 people. For Operation Tomodachi, DOD
12 officials reported that at least 20 U.S. naval ships, 140 aircraft, and approximately 20,000 military
13 personnel were involved in humanitarian assistance and disaster relief efforts in and around Japan. At
14 least 227 tons of relief supplies and humanitarian supplies were delivered to Japan. For Operation Fiery
15 Vigil, Clark AFB was evacuated, and more than 20 U.S. Naval ships and their personnel sortied from
16 Subic Bay Naval Base to evacuate more than 20,000 personnel to Andersen AFB for further transport to
17 safe havens. This operation included around-the-clock arrivals from the Philippines, processing through
18 U.S. Immigration screening, and around-the-clock departures to cities of safe haven.

19 Emergency responses to natural disasters of this nature would require pre-planning and exercising for the
20 potential contingency. The joint military exercises required to prepare for and execute humanitarian
21 airlift and disaster relief missions in real world situations are described in the following sections.

22 **Joint Military Exercises.** A limited number of scheduled joint, combined, and unit-level military training
23 activities and exercises, as described and analyzed in the Mariana Islands Range Complex EIS (DON
24 2010) and associated Biological Opinions (USFWS 2010a; NMFS 2011), would occur at GSN. Those
25 exercises would focus on real-world proficiency in sustaining joint forces and detecting, tracking, and
26 engaging units at sea, in the air, and on land in response to a wide range of missions.

27 Joint military exercises are an important opportunity to bring together multi-service and multi-national
28 platforms that do not always have the opportunity to train or exercise collectively. The U.S. Navy,
29 USAF, U.S. Marine Corp, and military from other countries operate a variety of combat and
30 combat-support aircraft designed to meet joint and multi-national training objectives for many exercises.
31 These joint and multinational exercises are commonly referred to as joint-combined exercises. The
32 United States routinely deploys forces to train in the western Pacific. Joint and combined exercises and
33 training maintain a stabilizing presence in the region, while allowing U.S. forces and other nations to
34 practice joint-combined skills in peacetime to prepare for success during a contingency.

35 Examples of typical combined exercises include Valiant Shield and Cope North. Valiant Shield occurs
36 biannually and usually takes place in September. This exercise involves land and maritime forces from
37 U.S. Navy, USAF, and U.S. Marine Corp, combined with multi-national forces, including observers from
38 the Pacific Rim nations. Cope North occurs annually and typically takes place in mid-February and also
39 might include multi-national forces. Aircraft and personnel participating in these combined exercises
40 would be temporarily located at and operate from GSN for a combined total of about 60 days per year.
41 No more than 700 personnel would participate in exercises at GSN at any given time, with a typical
42 exercise population being a 12-ship fighter package of 145 to 170 personnel. In addition, unit-level
43 training would also occur at GSN to exercise the capability to conduct divert landings and humanitarian
44 airlift staging.

45 **Jet Fuel Receiving, Storage, and Distribution.** Receipt of jet fuel at the Port of Saipan would be through
46 the existing port commercial facilities. The ability to store fuel and transfer fuel from the receiving port

to the airfield would be developed. Once these elements are constructed, as discussed in **Section 2.1.1.5**, they would be operated in support of divert landings, military exercises, and humanitarian assistance and disaster relief efforts.

Jet fuel would be offloaded at the existing fuel offloading facility at the Saipan seaport from vessels that are capable of navigating the harbor. Fuel would be offloaded into the two 2.1-million-gallon bulk storage tanks to be constructed adjacent to the seaport (see **Figure 2-6**). Standard fuel transfer tank trucks would be used to transfer fuel over existing paved roads from the port to the 4.2-million-gallon bulk storage tank at the airport. It would take six tank trucks (37,855 liters [10,000 gallons] each) 14 days working approximately 10 hours per day to fill the bulk storage tank at the airport. During scheduled joint military exercises, bulk jet fuel at the airport bulk tank would be transferred to one of two operating tanks, and the fuel would then be transferred to fuel tanker aircraft or other aircraft taking part in the exercises.

Billeting. Temporary billeting would be required for up to 700 personnel that would support aircraft operations at GSN during a divert landing, humanitarian airlift, or military exercise event. The USAF plans to accommodate support personnel either by using commercial lodging on Saipan or a BEAR kit. If the USAF were to use commercial lodging, the USAF and PACAF would enter into agreements with local hotels to accommodate personnel in commercial lodging during planned activities such as exercises, and local facilities and modular trailers would be used to conduct airfield support activities, such as administrative functions.

If the USAF were to use a BEAR kit for billeting, it would include about 45 billet tents, showers, latrines, 12 administrative shelters, 2 Power Pro shelters, an alert shelter, and a mortuary. A 920-kilowatt generator set and fuel bladders for the generators would also be installed.

The BEAR kit would be installed away from the existing taxiway and the future ramp, reducing the noise level at the BEAR base, but close enough to service and support the operation. The planned area is approximately 5.0 ha (12.3 ac) (see **Figure 2-6**). Access to the BEAR base would be through the service road used to monitor and maintain the water wells in the area. A perimeter fence with two vehicular gates and a pedestrian gate would surround the cantonment. An existing water source at the intersection of Flame Tree Road and Airport Access Road would be used. At a minimum, a 5-cm (2-inch) waterline would be installed to support the BEAR base from this location. A 21-cm (8-inch) sewer line with manholes spaced 107 m (350 feet) apart would be installed from the BEAR base to the sewer main line at the intersection of Flame Tree Road and Airport Access Road.

To operate the BEAR base on commercial power, a 1,200-kilovolt-ampere, 13.8-kilovolt to 4.16/2.4-kilovolt, pad-mounted transformer would be installed. Primary service to the transformer would require 3-phase, 15-kilovolt cable from the nearest overhead utility to the pad-mounted transformer.

2.3 Action Area

As described further in **Section 5.1**, loss and degradation of nightingale reed-warbler habitat and temporary disruption of breeding and other behaviors could occur at and adjacent to GSN during construction of facilities and during implementation of divert activities and exercises. Noise from military aircraft participating in divert activities and exercises could also temporarily disrupt the behavior of nightingale reed-warblers under the flight paths at GSN. Mitigation for adverse impacts include financial support provided by the USAF to conserve and manage nightingale reed-warbler habitat at the Saipan Upland Mitigation Bank, located in the Marpi region on the northeastern portion of Saipan. Because adverse impacts and mitigation could occur on the northern and southern portions of Saipan, the action area is defined as the entire Island of Saipan.

2.4 Impact Minimization and Conservation Measures

Construction Impacts. The USAF will implement all measures to minimize impacts to nightingale reed-warbler that are required by the *Programmatic Biological Opinion Regarding the Reestablishment, Management, and Use of the Saipan Upland Mitigation Bank, Saipan* (USFWS 2008a). Those impact minimization measures, as presented in the SUMB Biological Opinion and modified as described by USFWS personnel during a meeting in July 2012, are presented in **Table 2-2**. In addition, the USAF will not locate laydown yards or other temporary construction facilities in nightingale reed-warbler habitat or within the 50-m [160-foot] buffer zone around territories described in **Section 4.3**.

**Table 2-2. Impact Minimization Measures Required
by the Saipan Upland Mitigation Bank Biological Opinion.**

No.	Mitigation Measure
1	Prior to vegetation clearing, a biologist experienced in locating nightingale reed-warbler nests will search the area for active nests. If any active nests are located, they will be avoided using a 50-m (164-foot) buffer until the nest is abandoned or has actively fledged.
2	When possible, the use of very noisy (greater than 60 decibels A-weighted) heavy machinery should be limited to the non-active or non-peak breeding seasons or temporary noise barriers or buffer zones should be installed to protect nightingale reed-warblers using buffer zones or areas of connectivity.
3	When actions occur during the breeding season, a biologist experienced in documenting changes in bird behaviors should observe occupied nests during the use of heavy equipment. The biologist should record behavior before, during, and after noisy equipment use and document noise levels with a decibel meter. At the end of equipment use, the biologist should provide a behavioral observation report to the USFWS.
4	Adequate plastic construction fencing or brightly colored flagging will be placed and maintained around any avoided habitat (including buffer areas or adjacent parcels) to prevent impacts from construction equipment and personnel.
5	All on-site construction personnel will receive instruction regarding the presence of listed species and the importance of avoiding impacts on these species and their habitat.
6	All on-site personnel will receive instruction regarding the brown treesnake (<i>Boiga irregularis</i>) and what to do immediately in case of a sighting.
7	A Hazard Analysis and Critical Control Point Plan or similar approach that results in an implementation plan will be developed. The plan will incorporate measures to ensure that invasive species, including the brown treesnake, are not transported to Saipan via project materials or equipment. This plan will be reviewed by the USFWS to ensure the actions to eliminate or reduce risks are sufficient.
8	A qualified biologist will inspect all construction-related activities to ensure that no take of nightingale reed-warbler or destruction of their habitat occurs that is not authorized by the Biological Opinion. The biologist will have the authority to stop all activities that could result in such take or destruction until appropriate corrective measures have been completed. The biologist also will report immediately any unauthorized impacts to the USFWS and CNMI Division of Fish and Wildlife.
9	A brief summary report will be provided to the USFWS within 30 days of project implementation to document implementation of any fencing, buffer zones, and minimization measures.

Source: USFWS 2008a

Habitat Loss. The USAF will purchase one credit from the SUMB for each nightingale reed-warbler territory that is cleared of vegetation during project construction. As required by the SUMB Biological Opinion, if more than 29 percent of a territory is cleared or otherwise destroyed, the USAF will purchase one credit to compensate for the loss of that territory. If less than 29 percent of a territory is directly affected, the USAF will purchase a partial credit equal to the proportion of the territory cleared of vegetation or otherwise disturbed.

As described in **Section 2**, the USAF plans to construct facilities at GSN in stages and, depending on mission needs and Congressional authorization and appropriations, some project elements might not be completed on Saipan. The USAF, therefore, cannot state with certainty at this time whether or how many territories would be directly or indirectly affected by construction of facilities at GSN. Prior to the construction start each fiscal year or phase of construction, the USAF will present a construction plan to the USFWS and CNMI Division of Fish and Wildlife and will purchase the number of credits required to mitigate for the direct impacts of construction activities planned for that year or phase.

To mitigate for the indirect impacts on nightingale reed-warblers during the implementation phase of this project (see **Section 5.1.2**), the USAF will purchase credits or otherwise fund conservation activities at the SUMB conservation area as required in the SUMB Biological Opinion. That mitigation will be implemented prior to initiation of the first training exercise at GSN that results in the level of indirect impacts to be mitigated, as determined during the formal consultation.

Invasive Species. To reduce or eliminate the spread of brown treesnakes and other nonnative species during development, maintenance, and operation of facilities at GSN, the USAF will develop, submit to the USFWS for review, and implement Hazard Analysis and Critical Control Point Plans (or equivalent) as required by the SUMB Biological Opinion, including plans for receipt of materials and equipment shipped to Saipan for construction and implementation of the project. Those Plans, and all associated implementing instructions developed by the USAF, Joint Region Marianas, and other involved military organizations, will be compliant with the invasive species interdiction and control requirements in the Duncan Hunter National Defense Authorization Act, Public Law 110-417, Section 316 (2009), and DOD Defense Transportation Regulations, Chapter 505 protocols. At a minimum, those plans and implementing instructions will address the following as appropriate, based on the specifics of each activity.

- One-hundred percent inspection of all outgoing aircraft and materials from Andersen Air Force Base and Naval Base Guam, as currently required by Joint Region Marianas Instruction 5090.4, using trained quarantine officers and dog detection teams, and redundant inspections conducted on Saipan during project development and training activities.
- Protocols and procedures for inspection of commercial materials and equipment being shipped from elsewhere on Guam, and from other locations, to GSN.
- Use existing or new, temporary or permanent, snake-free quarantine areas on Saipan for inspection of cargo traveling from Guam to Saipan when applicable. Those areas will be subject to (1) multiple day and night searches with appropriately trained interdiction canine teams that meet performance standards, (2) snake trapping, and (3) visual inspections for snakes.
- Support of rapid response actions to brown treesnake sightings at GSN or the fuel facility at the Port of Saipan.
- Invasive species awareness training for all military and contractor personnel.

As stated in **Section 1.2**, this biological assessment does not address air warfare and air logistics training that would occur in the Mariana Islands Range Complex or elsewhere by aircraft temporarily operating

1 from GSN. Impacts on ESA-listed species from those activities, and the requirements for the control and
2 interdiction of invasive species, have been addressed in Biological Opinions developed by the U.S. Fish
3 and Wildlife Service (USFWS 2010a) and National Oceanic and Atmospheric Administration Fisheries
4 Service (formerly National Marine Fisheries Service) (NMFS 2011). Section 7 consultations also have
5 been completed, and requirements for invasive species control and interdiction have been developed, for
6 other ongoing for military training and operations in the Mariana Islands (e.g., USFWS 2006a, 2008b).
7 Those control and interdiction requirements include the following.

- 8 • Direct routing of personnel and cargo to GSN to avoid Guam seaports and airfields when possible
- 9 • Inspections of all outgoing aircraft and equipment from Guam and redundant inspections on
10 Saipan
- 11 • Establishment and operation of snake-free quarantine areas when applicable
- 12 • Environmental education of personnel
- 13 • Self inspection of equipment by service members
- 14 • Pathway analyses for all activities or groups of activities
- 15 • Involvement of the USFWS, Department of Agriculture, and other agencies in the development
16 and implementation of protocols and practices
- 17 • Participation in the development and implementation of the Regional Biosecurity Plan.

18 The above requirements for control and interdiction of invasive species are incorporated into
19 implementing instructions developed by Joint Region Marianas and other involved military organizations,
20 and those instructions will be followed for all military training activities and exercises on and from GSN.
21 The instructions are updated as necessary to incorporate changes resulting from new policies and
22 practices and to include revised or additional requirements resulting from applicable Section 7
23 consultations.

24 The USAF acknowledges that there is a limited availability of inspectors, trained dogs, and quarantine
25 facilities and equipment on Guam and in the CNMI. Planning for training exercises generally begins
26 months prior to implementation of an exercise, and planning for complex training that would require a
27 substantial number of inspectors, quarantine areas, or other personnel or equipment for control and
28 interdiction of invasive species generally would begin more than a year in advance of the exercise.
29 During that planning period, the U.S. Department of Agriculture and CNMI Department of Land and
30 Natural Resources (the agencies responsible for conducting searches for and interdiction of brown
31 treesnakes on Guam and the CNMI, respectively), USFWS, USAF, Joint Region Marianas staff
32 responsible for managing their brown treesnake program, CNMI Department of Lands and Natural
33 Resources staff, and other participants will cooperatively identify the inspection and interdiction
34 requirements for the exercise, including the number of trained quarantine officers and dog detection
35 teams. The USAF and those other agencies will also develop plans to ensure that inspection personnel are
36 available and that all requirements can be met, and will identify the support that the USAF will need to
37 provide for the inspections.

1

THIS PAGE INTENTIONALLY LEFT BLANK

3. Status of Threatened and Endangered Species on Saipan

This section summarizes information on the status and ecology of four threatened or endangered species that occur on Saipan. It does not discuss the Mariana fruit bat and Micronesian megapode, because, as described in **Section 1**, the USAF has determined that developing divert capabilities and conducting divert activities and exercises at GSN will have no effect on those species.

3.1 Nightingale Reed-Warbler

The following description of the nightingale reed-warbler comes primarily from the following sources, which are incorporated by reference.

- Recovery Plan for the Nightingale Reed-Warbler (USFWS 1998b)
- Programmatic Biological Opinion Regarding the Reestablishment, Management and Use of the Saipan Upland Mitigation Bank, Saipan (USFWS 2008a)
- Nightingale Reed-Warbler 5-Year Review Summary and Evaluation (USFWS 2010b).

Section 4.3 describes the results of surveys conducted around GSN to determine the abundance of nightingale reed-warblers in areas that could be directly and indirectly affected by the project.

Legal Status. The nightingale reed-warbler was listed under the ESA as endangered in 1970 (35 FR 18319). No critical habitat has been designated for this species. The current recovery plan for the nightingale reed-warbler was published in 1998 (USFWS 1998b).

Description and Taxonomy. The nightingale reed-warbler is approximately 16 to 21 cm (6 to 8 inches) long, grey to olive brown above, pale yellow below, and has a relatively long bill. Males are slightly larger than females. This species is in the marsh warbler family Acrocephalidae (USFWS 2008a).

Distribution and Abundance. There are three recognized subspecies of nightingale reed-warbler: *A. l. luscini* on Guam, Saipan, and Alamagan; *A. l. nijoi* on Aguiguan; and *A. l. yamashinae* on Pagan. There is prehistoric evidence that this species also occurred on Tinian, but it does not occur there now. Cibois et al. (2011) suggested that the nightingale reed-warbler on these islands might be separate species.

A volcanic eruption on Pagan in 1981 destroyed the only known habitat on that island and *A. l. yamashinae* is believed to be extinct. *A. l. nijoi* on Aguiguan are rare and might also be extinct. *A. l. luscini* have been extirpated from Guam and now occur only on Saipan and Alamagan (USFWS 2008a, 2010b). Less than 500 individuals are believed to occur on Alamagan (USFWS 2010a, p. 40).

Camp et al. (2009) summarized the results of islandwide forest bird surveys on Saipan over the previous three decades and reported that the number of nightingale reed-warbler detections had decreased from 287 in 1982, to 190 in 1987, to 118 in 2007. Density estimates per square kilometer of suitable habitat subsequently declined as a result of decreased detections in the respective survey years (58 birds, 1982; 40 birds, 1987; 23 birds, 2007). Based on the 2007 islandwide forest bird survey, the population estimate for nightingale reed-warblers on Saipan is 2,742 (Camp et al. 2009).

Habitat. Nightingale reed-warblers are found on Saipan in a variety of vegetation associations and are most abundant in areas of dense understory, including open, secondary, and tangantangan forests; elephant grass (*Pennisetum purpureum*) meadows; marshes; and wetland and forest edges. The species is uncommon or absent from residential areas, golf courses, limestone forests, beach strand, and swordgrass

(*Miscanthus floridulus*) savannah (Craig 1992, Mosher and Fancy 2002, USFWS 2008a, Camp et al. 2009).

Diet. The nightingale reed-warbler feeds primarily on insects and their larvae. Their diet also includes geckos, lizards, spiders, and snails. Nestlings are fed a variety of food items, including small caterpillars, large spiders, grasshoppers, skinks, geckos, ants, beetles, millipedes, moths, and praying mantids (USFWS 1998b).

Threats. Habitat loss and degradation is a primary threat to the nightingale reed-warbler on Saipan. Intensive agriculture on that island during the first half of the 20th century caused the loss of a substantial amount of wetland and upland habitat for this species. Much of that land has since reverted to second-growth forest that is used by reed-warblers. However, many second-growth forests have been and are being converted to urban development to support the large increase in the human population on Saipan. The human population increased by 429 percent from 1980 to 2000 (Camp et al. 2009, USFWS 2010b).

The establishment of the brown treesnake on Saipan would have serious impacts on this species. USFWS (2010b) stated that the spread of the brown treesnake to Saipan would likely cause the extirpation of nightingale reed-warblers from that island. The brown treesnake was the primary cause of the extirpation of forest tree birds, including the nightingale reed-warbler, from Guam.

Predation by introduced species such as feral cats (*Felis catus*) and rats (*Rattus* spp.) could be reducing the reproductive success of nightingale reed-warblers. Seventy-five percent of 28 active nests that failed were preyed upon by those or other species (USFWS 1998b, 2010b).

Other threats to this species include environmental contaminants in wetland habitat, fire in upland habitat, and the possible spread of the west Nile virus to Saipan (USFWS 1998, 2010b).

3.2 Mariana Common Moorhen

The following description comes primarily from the following sources, which are incorporated by reference.

- Mariana Common Moorhen Recovery Plan (USFWS 1992)
- Distribution and Abundance of the Mariana Subspecies of the Common Moorhen (Takano and Haig 2004)
- Mariana Common Moorhen 5-Year Review Summary and Evaluation (USFWS 2009b).

Legal Status. The Mariana common moorhen was listed under the ESA as endangered in 1984 (49 FR 33881). No critical habitat has been designated for this species. The current recovery plan for the common moorhen was published in 1992 (USFWS 1992).

Description and Taxonomy. The Mariana common moorhen is a slate-black member of the Rallidae family, and is about 36 cm (14 inches) in length. The distinguishing physical characteristics of adult birds include a red bill and frontal shield, white undertail coverts, a white line along the flank, and long olive-green legs with large unwebbed feet. Males and females are nearly identical in appearance and are difficult to distinguish from each other (USFWS 1992).

Distribution and Abundance. This species occurs on Guam, Tinian, Saipan, and rarely on Rota. The USFWS (1992) identified two primary wetlands on Saipan that are used by common moorhens: Lake

Susupe and Puntan Muchot/Garapan. Takano and Haig (2004) counted 154 moorhen at 18 locations on Saipan in 2001.

Habitat. The moorhen inhabits emergent vegetation of natural and man-made freshwater lakes, marshes and swamps. The key characteristics of moorhen habitat appear to be a combination of deep (greater than 60 cm [24 inches]) marshes with robust emergent vegetation and equal areas of cover and open water. This species is known to be wary and closely associated with cover provided by edge vegetation (USFWS 1992, Takano and Haig 2004).

Diet. Moorhens feed on plant and animal matter in or near water. Observers have noted grass, adult insects, and insect larvae in moorhen stomachs. Moorhen are probably opportunistic feeders, so their diet varies among areas (USFWS 1992).

Threats. The loss of wetlands is the most important factor in the decline of common moorhens. Many wetlands in the Mariana Islands have been filled or dredged for commercial or residential development. Additionally, there has been a decline of traditional wetland agricultural practices such as taro and rice cultivation, which has diminished the amount of wetlands available to the moorhen. Some wetlands have experienced accelerated sedimentation due to land clearing, road building, grassland fires, and other human activities. Predation by nonnative species such as rats and monitor lizards (*Varanus indicus*) could also be adversely affecting this species (USFWS 1992, 2009b).

3.3 Mariana Swiftlet

The following description of the Mariana swiftlet comes primarily from the following sources, which are incorporated by reference.

- Recovery Plan for the Mariana Islands Population of the Vanikoro Swiftlet (USFWS 1991)
- Relative Abundance and Distribution of Mariana Swiftlets in the Northern Mariana Islands (Cruz et al. 2008)
- Mariana Swiftlet or Chachaguak 5-Year Review Summary and Evaluation (USFWS 2010c).

Legal Status. The Mariana swiftlet was listed under the ESA as endangered in 1984 (49 FR 33881). No critical habitat has been designated for this species. The current recovery plan for the Mariana swiftlet was published in 1991 (USFWS 1991).

Description and Taxonomy. The Mariana swiftlet has sooty black upper parts with a slightly paler rump. The underparts are dark gray but with a brownish tinge. Some white is present at the base of the feathers in the loreal region. The plumage of both sexes is alike. The average weight of adult swiftlets is 7.4 grams (0.3 ounces). The swiftlet is in the Apodidae family (USFWS 1991).

Distribution and Abundance. Swiftlets currently are known to occur on Guam, Aguiguan, and Saipan (Cruz et al. 2008). The population in 2010 was estimated to be more than 5,000, with most located on Saipan. This species currently nests in at least 10 caves on Saipan (MES 2012).

Habitat. On Saipan, swiftlets nest and roost in caves and their preferred foraging habitats include areas over forests, clifflines, grassy hills, and grassy ravines (USFWS 1991, 2010c).

Diet. Swiftlets mostly eat insects that they catch while in flight (USFWS 1991). On Aguiguan, swiftlets consumed primarily hymenopterans and hemipterns (Valdez et al. 2011).

Threats. Human disturbance at nesting colonies is an important threat to this species. Other threats include predation by brown treesnakes (on Guam) and other nonnative predators, and the presence of cockroaches and wasps in nest caves (USFWS 1991, 2010c).

3.4 Green Sea Turtle

The following description of the green sea turtle comes primarily from the following sources, which are incorporated by reference.

- Recovery Plan for U.S. Pacific Populations of the East Pacific Green Turtle (NMFS 1998)
- An Assessment of the Sea Turtles and Their Marine and Terrestrial Habitats at Saipan, Commonwealth of the Northern Mariana Islands (Kolinski et al. 2001)
- Green Turtle Nesting Sites and Sea Turtle Legislation Throughout Oceania (Maison et al. 2010).

Legal Status. The green sea turtle was classified as threatened under the ESA in 1978. The breeding populations in Florida and the Pacific coast of Mexico are classified as endangered; elsewhere the species is listed as threatened (43 FR 32800). No critical habitat has been designated for this species in the Pacific Ocean. The current recovery plan for the Pacific population of the green turtle was published in 1998 (NMFS 1998).

Description and Taxonomy. Green sea turtles have a smooth top shell with shades of black, gray, green, brown, and yellow; their bottom shell is yellowish white. Adults can weigh 136 to 158 kg (300 to 350 lbs) and hatchlings weigh about 0.02 kg (0.05 lbs). Adults can reach 1 m (3 feet) in length and hatchlings are about 5 cm (2 inches) long. Green sea turtles are in the Cheloniidae family.

Distribution and Abundance. The green turtle is globally distributed and generally found in tropical and subtropical waters along continental coasts and islands between 30° north and 30° south latitude. This species generally nests on Saipan from March through August with some year-round nesting documented. It is estimated that possibly fewer than 10 individual turtles nest annually on Saipan, Tinian, and Rota. In 1999, turtle activity was documented at eight beaches, with six nests found on a total of three beaches (Kolinski et al. 2001). Monitoring of nesting activity on Saipan since 1999 has documented 4 to 18 nests per year. At least five beaches on Saipan have been monitored somewhat consistently over the past 5 years: Bird Island, Wing, Tank, Lao Lao Bay, and Obyan beaches (Maison et al. 2010).

Habitat. Green turtles primarily use three types of habitat: beaches for nesting, open ocean convergence zones, and coastal areas for feeding.

Threats. The principal cause of the historical, worldwide decline of the green turtle is long-term harvest of eggs and adults on nesting beaches and harvest of juveniles and adults on feeding grounds. These harvests continue in some areas of the world and compromise efforts to recover this species. Incidental capture in fishing gear, primarily in gillnets, but also in trawls, traps and pots, longlines, and dredges is a serious ongoing source of mortality. Green turtles are also threatened in some areas of the world by the disease fibropapillomatosis.

4. Environmental Baseline

This section describes the current environment in the action area as influenced by past and present impacts of human activities. The current environment, impacts of human activities on Saipan, and current status of the nightingale reed-warbler on the island, have been described in detail in the following reports, which are incorporated here by reference.

- Recovery Plan for the Nightingale Reed-Warbler (USFWS 1998b)
- Final Biological Opinion for the Proposed Rehabilitation of Runway 07/25 and Relocation of Water Catchment Reservoir, Saipan International Airport (USFWS 2006b)
- Programmatic Biological Opinion Regarding the Reestablishment, Management and Use of the Saipan Upland Mitigation Bank, Saipan (USFWS 2008a)
- Nightingale Reed-Warbler 5-Year Review Summary and Evaluation (USFWS 2010b)
- Biological Report: Saipan International Airport Project Site, Saipan, CNMI (MES 2012)
- Draft EIS for Divert Activities and Exercises, Guam and Commonwealth of the Northern Mariana Islands (USAF 2012).

To support delivery of jet fuel on Saipan, two aboveground 2.1-million-gallon tanks and associated infrastructure would be installed on previously cleared and developed land at the Port of Saipan (see **Figure 2-6**). A portion of that flat site has a deteriorating asphalt surface, and fine limestone gravel has been spread across most of the remainder of the site. There is a thin stand of dense, weedy vegetation around the perimeter of the site; vegetation in the remainder of the area is sparse. This developed site does not contain suitable habitat for nightingale reed-warblers or other ESA-listed species, and is not described further in this section.

The remainder of this section describes in detail the environment on and around GSN, and the results of surveys conducted to determine the presence of ESA-listed species and other biological resources in that area. GSN is situated on approximately 285 ha (700 ac) in the southern portion of the Saipan (see **Figure 2-1**). It is owned and operated by the Commonwealth Ports Authority under the Commonwealth Ports Authority Act (Public Law 2-48), which was enacted in October 1981. The 2002 Saipan International Airport Master Plan outlines the development strategy for the airport (Commonwealth Ports Authority 2002). GSN facilities currently include a 2,650-m- (8,700-foot-) long runway and adjacent taxiway and parking ramps and a terminal, cargo-handling facility, parking lots, drainage detention basin, and other operational facilities to the north of the runway. GSN property to the south of the runway is undeveloped and leased for cattle grazing. The land surrounding the airport is used primarily for agricultural, recreation, and conservation.

Large portions of areas to the north and south of the current airport, including areas where the USAF would construct facilities and implement divert activities and exercises, were developed before and during World War II as aircraft parking areas, taxiways, and other airfield-related structures. Degraded aircraft parking surfaces and other structures are still visible in some areas, although much of that area is now covered with tangantangan.

The most recent development at GSN that affected listed species, and required consultation under Section 7 of the ESA occurred after 2006. That consultation covered rehabilitation of the GSN runway and relocation of a water catchment reservoir from between the runway and taxiway to its current position to the north of the runway. The USFWS estimated that disturbance of about 10 ha (25 ac) for those activities would directly affect nightingale reed-warblers in two territories and indirectly affect

reed-warblers in three other territories (USFWS 2006b). No other listed threatened or endangered species were adversely affected by the project.

4.1 Vegetation

Vegetation communities at and around GSN were mapped and characterized during field surveys conducted during October 2011. Vegetation community types observed at and surrounding the sites where construction and improvements would occur include tangantangan forest, mowed fields, park areas, and lands used for agriculture and grazing (see **Figure 4-1**), and are described in the following paragraphs.

Tangantangan Forest. Canopy vegetation in tangantangan forest is characterized by a near monoculture of nonnative tangantangan. The following forest tree species were most commonly observed within those forests: ahgao (*Premna obtusifolia*), hodda, pago (*Hibiscus tiliaceus*), sumak, lada (*Morinda citrifolia*), and papaya; and nonnative trongkon-kalaskas (*Albizia lebbbeck*) and atbut or flame tree (*Delonix regia*). The understory of tangantangan forest consists largely of nonnative herbaceous weeds. Common species include coral berry (*Rivina humilis*), rosary pea (*Abrus precatorius*), Chinese violet (*Asystasia gangetica*), and achyranthes (*Achyranthes canescens*). Gaps in the tangantangan forest and some areas of canopy are blanketed by a layer of vines. These vines include the native akankang tasi (*Canavalia rosea*); and the nonnative bittervine (*Mikania micrantha*), abubo (*Stictocardia tilifolia*), coral vine (*Antigonon leptopus*), and ivy gourd (*Coccinia grandis*). Vines present in the area are stimulated by the opening up of the canopy after storm disturbances and can form oppressive vine mats that retard the growth of, or kill, native vegetation.

Mowed Fields. Mowed field habitat consists mainly of introduced grasses and herbaceous ground cover. These fields occur between and around the airfield runways, taxiways, parking ramps, and associated disturbed sites. They are characterized by grasses, including Bermuda grass (*Cynodon dactylon*), crowfoot grass (*Dactyloctenium aegyptium*), broadleaf carpetgrass (*Axonopus compressus*), golden beardgrass (*Chrysopogon aciculatus*), (*Chloris* sp.), and herbaceous weeds including the sensitive plant, shameplant (*Mimosa pudica*), tropical lucerne (*Stylosanthes guianensis*), and white moneywort (*Alysicarpus vaginalis*).

Park Areas. Parks at and near GSN are characterized by areas with grass that is mowed close to ground level and that have narrow strips of ornamental trees and shrubs that have been planted primarily along road edges. Grasses in park areas are characterized by Bermuda grass and golden beardgrass. Ornamental trees that have been planted along road edges are characterized by atbut or flame tree and several species of plumeria (*Plumeria* spp.). Hodda also occurs at several locations in the park areas. Shrub species planted along road edges are characterized by bougainvillea (*Bougainvillea* sp.), lantana (*Lantana camara*), and several species of hibiscus (*Hibiscus* spp.).

Agriculture/Grazing. Areas used for agriculture and grazing are located south of GSN within and near the area where the munitions storage area would be located. That location is characterized by scrub habitat with sparse trees. Adjacent areas include stands of tangantangan, grazed land, scrub habitat, and agricultural plots that are fallow or planted with local crops. Grazed areas are characterized by a sparse occurrence of trees including atbut or flame tree and mango (*Mangifera indica*) with a minor occurrence of Ahgoa. Scrub habitat has a mix of shrub and herbaceous species dominated by lantana, Jack-in-the-bush (*Chromolaena odorata*), nettleleaf velvetberry (*Stachytarpheta urticifolia*), and romerillo (*Bidens alba*). Tangantangan occurs as short saplings scattered through the scrub habitat.

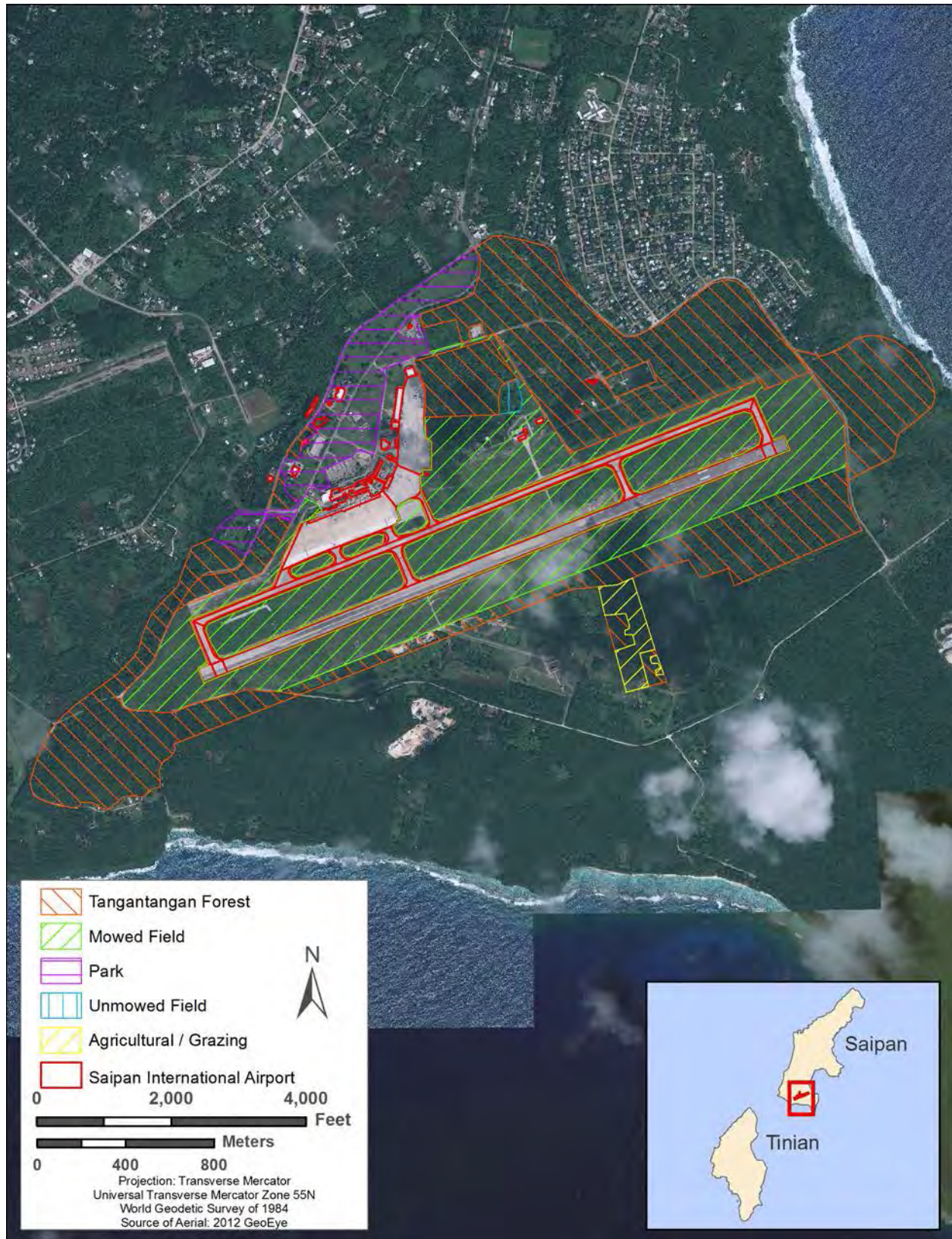


Figure 4-1. Vegetation Communities at GSN

4.2 Wildlife

Characterization of fauna occurring in and around GSN was based on incidental observation of species during vegetation mapping conducted in October 2011 (USAF 2012) and during surveys for nightingale reed-warblers and other avian species conducted from late January through early April 2012 (MES 2012). **Figure 4-2** shows the areas surveyed at and surrounding GSN in 2012.

Birds. During March 2012, 18 point-count surveys for birds were conducted in areas surrounding the airfield (MES 2012). Those surveys were conducted between 0600 and 1000 hours. A total of 762 detections of birds of 14 species were recorded. The most commonly detected bird species was the bridled white-eye (*Zosterops conspicillatus*), which accounted for 28 percent of avian observations. Other species detected, in descending order of abundance, include the black noddy (*Anous minutus*), white tern (*Gygis alba*), rufous fantail (*Rhipidura rufifrons*), island collared dove (*Streptopelia bitorquata*), Micronesian starling (*Aplonis opaca*), orange-cheeked waxbill (*Estrilda melpoda*), Micronesian myzomela (*Myzomela rubratra*), golden white-eye (*Cleptornis marchei*), white-throated ground dove (*Gallicollumba xanthonura*), collared kingfisher (*Todiramphus chloris*), Mariana fruit dove (*Ptilinopus roseicapilla*), nightingale reed-warbler, and yellow bittern (*Ixobrychus sinensis*). During those surveys, observers actively searched for Mariana swiftlets and Micronesian megapodes; no individuals of those species were detected.

Transect surveys were also conducted in 2012 at the water catchment basin located on GSN property north of the runway and taxiway and at two artificial ponds at the Coral Ocean Point golf course located west of the airport (MES 2012). The following six bird species were observed at the water catchment basin: Eurasian wigeon (*Anas penelope*), northern shoveler (*Anas clypeata*), green-winged teal (*Anas carolinensis*), wood sandpiper (*Tringa glareola*), little egret (*Egretta garzetta*), and peregrine falcon (*Falco peregrinus*). Nine bird species were documented at the Coral Ocean Point golf course east pond: wood sandpiper, black-winged stilt (*Himantopus himantopus*), tattler sp. (*Tringa* sp.), black-tailed godwit (*Limosa limosa*), Mariana common moorhen, common greenshank (*Tringa nebularia*), common sandpiper (*Actitis hypoleucos*), yellow bittern, and marsh sandpiper (*Tringa stagnatilis*). Six species were documented at the golf course west pond: Pacific golden plover (*Pluvialis dominica*), wood sandpiper, both white and dark morphs of the Pacific reef heron (*Egretta sacra*), yellow bittern, tattler sp., and common sandpiper.

During the 2012 surveys, biologists located a black noddy rookery near GSN. The rookery was approximately 205 m (675 feet) south of the proposed bulk fuel storage area, 195 m (640 feet) south of the proposed operational fuel tanks and hydrant system, 440 m (1,115 feet) northwest of the proposed maintenance facility, and 305 m (1,000 feet) north of the proposed west parking apron. There were more than 60 noddy nests located mostly in a large *Casuarina* tree with some in an adjacent flame tree. Most of the nests were active at the time of the surveys. There were also numerous white terns flying around the rookery. It was not determined whether the terns were nesting in the area.

In November 2005, a biologist from the U.S. Department of Agriculture, Wildlife Services, conducted an initial onsite assessment of wildlife hazards at GSN. Wildlife Services personnel determined the primary threats to aviation safety at GSN included cattle egrets, intermediate egrets, Pacific golden plovers, whimbrel (*Numenius phaeopus*), ruddy turnstones (*Arenaria interpres*), island collared doves, white terns, black noddy, and brown noddy (*Anous stolidus*). Other birds present that could pose a slightly lower risk to aviation safety included feral pigeons (*Columbia livia*), yellow bitterns, black-winged stilts, collared kingfishers, Micronesian starlings, and Eurasian tree sparrows (*Passer montanus*) (USDA 2008).

Mammals. The only mammals incidentally observed during the 2011 vegetation mapping and 2012 avian survey were rats (*Rattus* sp.), house shrews (*Suncus murinus*), and feral cats. No Mariana fruit bats or optimal roosting or foraging habitat for that species were found during those surveys.



Figure 4-2. Areas surveyed at GSN in 2012

Reptiles and Amphibians. Green anoles (*Anolis carolinensis*), Pacific blue-tailed skinks (*Emoia caeruleocauda*), green tree skinks (*Lamprolipsis smaragdina*), and curious skinks (*Carlia fusca*) were incidentally observed during the 2011 vegetation mapping and 2012 avian surveys. Only one amphibian, the marine toad (*Rhinella marina*), was observed in the area. [Note: *Rhinella* is a subgenus of the genus *Bufo*. *Rhinella marina* and *Bufo marina* are both currently used synonymously.] Focused reptile surveys were not conducted and it is likely that additional native and nonnative gecko and skink species are present in the area.

Invertebrates. The following species of butterfly were noted during surveys. Eggflies (*Hypolimnas* sp.), including blue moon and guardian, were frequently observed flying within and along the edge of tangantangan forest. The blue-banded king crow (*Euploea eunice*), common grass blue (*Zizina hylax*), large grass yellow (*Eurema blanda*), lemon migrant (*Catopsilia pomona*), cycad blue butterfly (*Chilades pandava*), and common mormon (*Papilio polytes*) were also observed on mowed edges of the tangantangan forest.

4.3 Surveys for Nightingale Reed-Warblers

Surveys were conducted for the nightingale reed-warbler to the north and south of the GSN runway following the protocol developed by the USFWS (USFWS 2009c). As specified by that protocol, one or two experienced observers walked designated line transects actively listening and watching for nightingale reed-warblers (MES 2012). All reed-warbler detections were plotted onto project site maps that were carried in the field. Playback recordings were not used to elicit responses. All surveys were conducted between 0600 and 1000 hours and 1630 hours to sunset. Survey results were used to determine the number of territories found on the project site. For this report, territories were defined as areas where singing male reed-warbler detections were concentrated and then further delineated with detections of males singing simultaneously.

Ten protocol surveys for nightingale reed-warblers were conducted between 21 January and 29 March 2012 in areas to the north of the GSN runway where the USAF proposes to develop facilities, and to the south of the runway in the area of the proposed munitions storage facility (see **Figure 4-2**). Eight nightingale reed-warbler territories were detected within the area surveyed north of the GSN runway (see **Figure 4-3**). No reed-warblers were detected to the south of the runway.

4.4 Surveys for Common Moorhens

The only ponds or other potentially suitable habitat for the Mariana common moorhen within or near GSN are the water catchment basin located north of the GSN runway and two artificial ponds west and northwest of the runway on the Coral Ocean Point golf course (see **Figure 4-2**). Nine line transect surveys were conducted around the entire perimeter of the water catchment basin and golf course ponds between 28 January and 24 March 2012 to detect moorhens and other avian species (MES 2012). Playback recordings were not used during those surveys to elicit responses from moorhens.

No moorhens were detected at the GSN water catchment basin or the golf course pond to the northwest of GSN (labeled west pond on **Figure 4-2**). A single adult moorhen was seen at the east golf course pond on 25 February and 4, 10, and 17 March. That pond has an impervious lining that inhibits the growth of shoreline emergent vegetation. The moorhen was seen along the southeastern, southwestern, and northeastern shorelines, and was observed roosting in and taking cover under a *Bougainvillea spectabilis* plant along the northeastern shoreline.

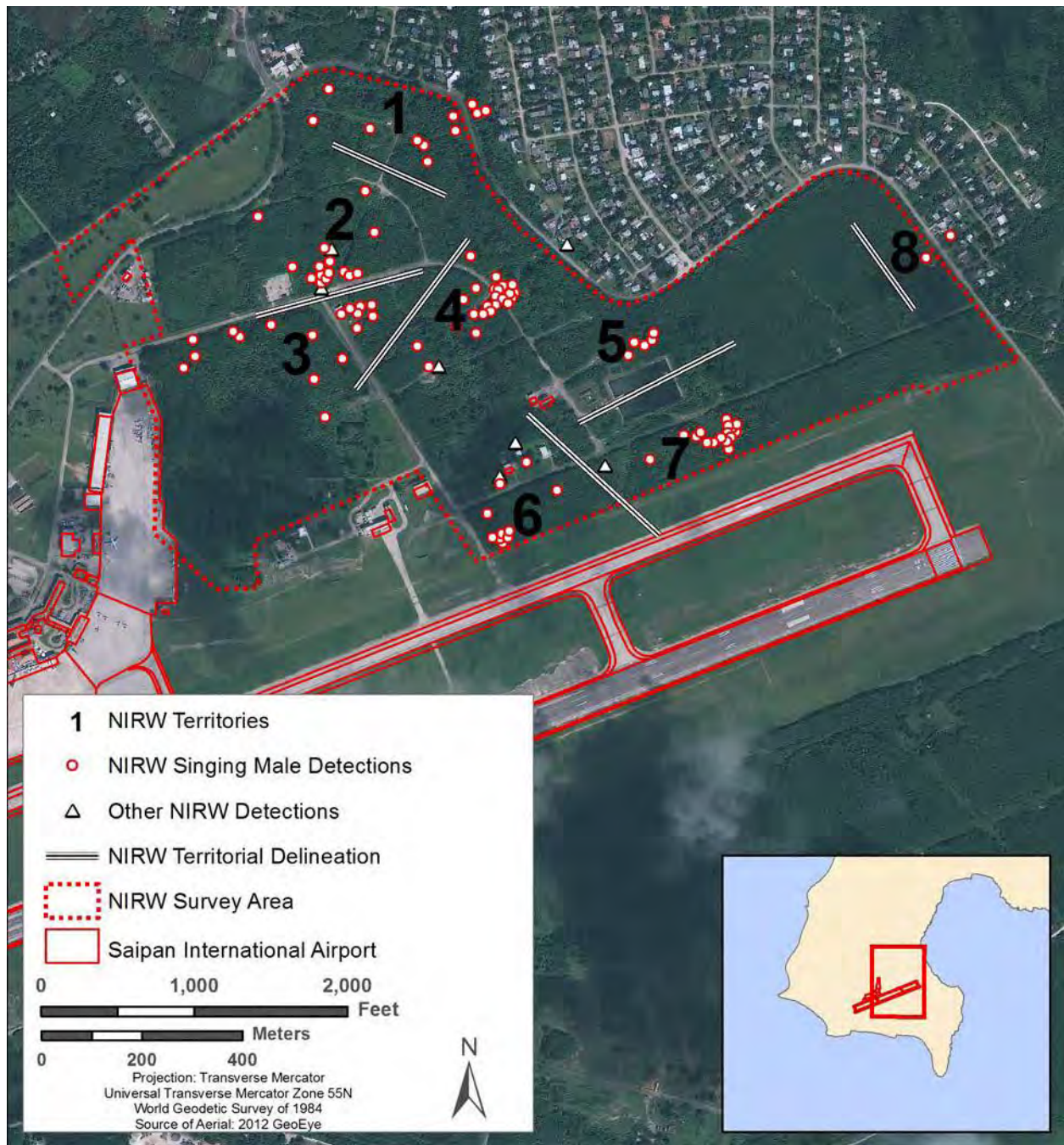


Figure 4-3. Nightingale Reed-Warbler Territories Detected within Surveyed Areas at GSN, January–April 2012

- 1 Two reconnaissance-level surveys also were conducted in the tangantangan forests east and west of the
2 GSN runways (see **Figure 4-2**). More extensive protocol surveys were not conducted in those areas
3 because the USAF does not plan to develop facilities within, or otherwise directly disturb, those forested
4 areas. One singing male was detected west of the runway during one of those surveys.
- 5 Moorhens have been detected at the east golf course pond since about 2001 during surveys conducted by
6 or for the CNMI Division of Fish and Wildlife (Paul Radley, CNMI Division of Fish and Wildlife,
7 personal communication, March 26, 2012).

5. Effects of the Action

As described in **Section 1.2**, the USAF has determined that plans to establish divert capabilities at GSN and conduct divert activities and exercises on Saipan would have no affect on the Mariana fruit bat and Micronesian megapode. These decisions were based on the lack of suitable habitat for those threatened and endangered species near GSN, and effects on those species are not further discussed here.

5.1 Nightingale Reed-Warbler

Development and construction of facilities and infrastructure at GSN to support divert landings, periodic exercises, and humanitarian assistance and disaster relief would result in the loss and degradation of habitat for nightingale reed-warblers, and noise from those construction activities could temporarily disrupt the behavior of reed-warblers living adjacent to construction areas. Noise, human activity, and other disturbances during implementation of ground and air activities, aircraft support activities, and other airfield ground activities could also temporarily disrupt the behavior of nightingale reed-warblers in areas surrounding GSN. Transportation of equipment and personnel from Guam and other locations could result in the introduction of invasive species into Saipan, including the brown treesnake; the USAF would continue to implement practices to prevent the transport and release of brown treesnakes and other invasive species.

5.1.1 Impacts During Construction

Development of all proposed facilities would require the disturbance of up to about 24 ha (59 ac) at GSN and 2 ha (4 ac) at the Port of Saipan. In part to minimize impacts on nightingale reed-warblers, the USAF plans to locate most of their facilities in existing developed areas or areas that are currently mowed or otherwise periodically disturbed (see **Table 5-1**). However, because of the requirements to site some facilities in specific locations (such as parking ramps next to the taxiway), and because of the lack of cleared areas north of the existing GSN facilities, about 4.5 ha (11.0 ac) of tangantangan forest would be disturbed to develop and construct all proposed facilities (see **Table 5-1**).

The following evaluation of potential impacts on nightingale reed-warbler territories is based on the assumption that all proposed facilities will be developed. It is important to note that the USAF might not develop all facilities, and the impacts on nightingale reed-warbler, and associated required mitigation, could be less than that described. The following criteria in the SUMB Programmatic Biological Opinion (USFWS 2008a) was used to determine whether nightingale reed-warbler territories would be directly or indirectly affected.

- “Direct effects include clearing of vegetation or otherwise destroying a territory. If 29 percent or more of a territory is cleared or otherwise destroyed, then the entire territory will be considered destroyed. If less than 29 percent of a territory is cleared or otherwise destroyed, then only that portion of the territory will be considered directly affected and the remaining portion will be considered indirectly affected.”
- “Habitat will be considered indirectly affected when the remaining portion of a territory where less than 29 percent is cleared of vegetation; or any portion of an adjacent nightingale reed-warbler territory would be subject to increased risk from nonnative invasive plant or animal access to habitat, feral ungulate access to habitat, predators..., human intrusion, erosion, or fire risk due to implementation of the proposed project.”

**Table 5-1. Amount of Vegetation Communities to be Removed
for Construction of All Proposed Facilities at GSN (hectares [acres])**

Facility	Tangantangan Forest	Mowed Field	Park	Agriculture/ Grazing	Disturbed/ Unmowed
Runway extension (west)	–	1.7 (4.3)	–	–	–
Runway extension (east)	–	1.9 (4.6)	–	–	–
Parking apron and ramp (west)	–	4.4 (10.8)	–	–	–
Parking apron and ramp (east)	2.6 (6.5)	2.0 (4.9)	–	–	–
Hangar	0.3 (0.8)	–	–	–	–
Temporary Munitions Storage Area	–	–	–	0.4 (1.0)	–
Hazardous cargo pad and arm/disarm Pad	0.4 (1.0)	1.2 (2.9)	–	–	0.2 (0.6)
Maintenance facility	0.04 (0.1)	–	–	–	–
Billeting (BEAR) site	–	–	5.0 (12.3)	–	–
Operational fuel tanks and hydrant system	–	–	1.3 (3.2)	–	0.3 (0.7)
Bulk fuel storage	1.1 (2.6)	–	0.04 (0.1)	–	0.9 (2.3)
Port of Saipan fuel receipt and storage	–	–	–	–	1.8 (4.4)
Total (acres)	4.5 (11.0)	11.1 (27.5)	6.3 (15.6)	0.4 (1.0)	3.2 (8.0)

- “Where indirect effects can be minimized on-site, a buffer zone or fences will be used, as appropriate. ... An on-site buffer zone should be a minimum depth of 50 m [160 feet] from the edge of the construction to the nearest nest otherwise that nest and territory will be considered directly impacted.”

Eight nightingale reed-warbler territories were detected during 10 surveys conducted from 22 January to 27 March 2012 (see **Figure 5-1** and **Table 5-2**). Reed-warblers were detected in most territories throughout the survey period; however, they were detected in territory 5 from 11 February to 10 March and in Territory 8 from 22 to 24 March (MES 2012). The area used by reed-warblers within those territories during the surveys was calculated by measuring the minimum-sized convex polygon encompassing all observations. Some of the areas used by reed-warblers during the survey period were small compared to average territory size of about 4 hectares (10 acres) or larger reported by Mosher (2006; USFWS 2010b). Only two detections occurred within territory 8; thus, the area used within that territory was not calculated.

Construction of the east parking ramp would require the clearing of about 2.6 ha (6.5 ac) of tangantangan forest, including 53 percent of the area used in territory 6 (see **Figure 5-1**). The breeding birds in that territory would be displaced, and those birds likely would not survive or would have reduced reproductive success.



Figure 5-1. Proposed Project Facilities and Nightingale Reed-Warbler Territories

Table 5-2. Nightingale Reed-Warbler Territories at GSN, 2012

Territory	Size – Hectares (acres)	Distance to Nearest Proposed Facility – Meters	Nearest Proposed Facility	% Disturbed
1	2.5 (6.1)	70	Billeting	0
2	2.8 (7.0)	37	Bulk fuel tanks	0
3	3.8 (9.3)	12	Bulk fuel tanks	0
4	1.9 (4.6)	168	Maintenance building	0
5	0.2 (0.6)	213	Hanger	0
6	1.5 (3.8)	0	East parking apron	53
7	0.8 (2.1)	70	Hanger	0
8	n/a	335	Hot cargo pad	0

Construction of the east parking ramp would require the clearing of about 2.6 ha (6.5 ac) of tangantangan forest, including 53 percent of the area used in territory 6 (see **Figure 5-1**). The breeding birds in that territory would be displaced, and those birds likely would not survive or would have reduced reproductive success.

The bulk fuel storage tanks would be installed adjacent to the areas used within territories 2 and 3 (see **Figure 5-1**). Over half of the 2.1-ha (5.0-ac) site where the fuel tanks would be installed, including the southern portion closest to habitat used by reed-warblers in those territories, was cleared and used as a materials storage area temporarily during excavation of the GSN detention basin. Because a portion of that site has been cleared, and the remaining vegetated area does not appear to be used, or is used infrequently, by nightingale reed-warblers, there would be no direct effects on those territories. However, as suggested by the USFWS (2006b) for other construction activities at GSN, noise, human activities, lights, and other disturbances associated with the construction and operation of the fuel storage system could indirectly adversely affect nightingale reed-warblers in those territories by disrupting or modifying their behavior, further degrading nearby nesting or foraging habitat, causing an increase in predation, or otherwise causing a decrease in reproductive output. Because there would be no loss of habitat within those territories, and because a portion of the bulk fuel storage area already has been cleared, it is likely that the territories would persist. As evidence of this likelihood, two territories that were predicted to be directly affected by construction of the GSN detention basin (USFWS 2006b) persisted during construction of that facility, and nightingale reed-warblers were detected in those areas as territories 5 and 7 in 2012 (see **Figure 5-1**).

The other five territories would be separated from facilities by a buffer of tangantangan forest of more than 50 m (164 feet) (see **Table 5-2**), and thus would not be directly or indirectly affected, or would be minimally affected, by construction. The nearest observations in two of those territories (1 and 7) were about 70 m (230 feet) from the edge of a facility, but the majority of the detections in those territories were more than 150 m (500 feet) from areas that would be disturbed. The other three territories would be separated from proposed facility locations by a buffer of 150 to more than 300 m (550 to more than 1,000 feet). As shown in **Figure 5-1**, nightingale reed-warblers occur at GSN in close proximity to disturbed areas with ongoing human presence; therefore, territories located at such large distances from the facilities would not be affected by facility construction.

5.1.2 Impacts During Implementation

As further described in **Section 2.2**, after completion of construction, the USAF would use GSN periodically and temporarily for divert landings and takeoffs, joint military exercises, airlift staging for humanitarian assistance and disaster relief, and other activities. All activities would be conducted within existing disturbed and developed areas and would not result in any additional habitat loss.

During implementation of the project, nightingale reed-warblers living at and near GSN, including those occurring in the tangantangan forests to the east and west of the runway, could be adversely affected by an increase in noise, lighting at night, and human activities during divert activities and exercises. To ensure that nightingale reed-warblers are not disturbed during activities and exercises, personnel would be restricted to the developed facilities at GSN and would be briefed on that and other requirements for the protection of nightingale reed-warblers and other listed species. In addition, if personnel are to be billeted at GSN, the location of the BEAR facility would be temporarily fenced in part to keep personnel away from nightingale reed-warbler habitat.

The increase in takeoffs and landings of large aircraft at GSN could cause more birds at GSN to be struck and killed by aircraft. However, nightingale reed-warblers nest and forage in dense vegetation (Craig 1992, USFWS 1998b) and therefore are unlikely to be struck by military or other aircraft taking off from, or landing at GSN.

The periodic increase in frequency and intensity of noise from military operating during military exercises at GSN has the potential to adversely affect nightingale reed-warblers living adjacent to or near GSN. On average, about 13 large aircraft (e.g., 747-200 and 767-300 commercial aircraft), and 126 smaller aircraft currently arrive or depart daily at GSN (USAF 2012, Section 3.1.2.1), and nightingale reed-warblers and other animals living below the flight paths at GSN are exposed to noise from those takeoffs and landings year round. During military exercises, which might occur at GSN as many as 8 weeks per year, up to about 72 additional takeoffs and landings by large aircraft such as the KC-135 and smaller jet aircraft such as the F-18 or F-22 could occur on a very busy day.

To compare the sound levels generated by those aircraft, sound energy level per aircraft type was estimated at 1,000 feet from the end of the runway during takeoff. Sound energy level is calculated as the sum of sound energy over the duration of a noise event (such as a flyover) and represents an equivalent noise event with a one-second duration. Because the energy level is normalized to one second, it is higher than the maximum sound level for that event. The actual sound level will vary depending on power setting, accent and decent angle, weather, and other factors. Sound levels are reported here in units of A-weighted decibel (dBA), which is weighted by the ability of humans to hear various sound frequencies, and is used to characterize sound levels that can be sensed by the human ear. The auditory sensitivity of birds to sound frequencies differ from those of humans; however, because there is no standard or commonly used measure that characterizes sound levels sensed by birds, results are reported in dBA, which is measured on a logarithmic scale.

The estimated sound energy level of a B-747 commercial aircraft during takeoff at 1,000 feet is 106.3 dBA. The sound energy level of a KC-135 (103.9 dBA) and F-16 (109.1 dBA) is similar, and the sound energy level of an F-22 is higher (122.6 dBA).

To evaluate the potential cumulative increase in noise levels that would occur during planned joint military exercises or other unit-level exercises, the USAF modeled and reported in the Draft EIS

(USAF 2012, Section 4.1.1.2) day-night average sound levels (DNL) for three noise-level scenarios, with the following type and mix of aircraft (cargo versus fighter) for each scenario.

- Low scenario—12 KC-135
- Medium scenario—6 KC-135, 8 F-16, and 4 F-22
- High scenario—12 F-16 and 12 F-22.

To model an average busy day for each scenario, it was estimated that all aircraft would complete 4 operations per day (2 arrivals and 2 departures) during military exercises. See the Draft EIS (USAF 2012, Section 4.1.1.2) for other assumptions used in the calculations.

Figures 5-2 through 5-4 show predicted DNL contours for the low, medium, and high scenarios, respectively (USAF 2012, Section 4.1.1.2), and **Figure 5-5** shows a closer view of the predicted noise surrounding GSN for the medium scenario. As shown in the figures, there would be an increase in sound levels in the areas surrounding GSN on days when exercises are held there. For example, at Coral Ocean Point Golf Course the predicted sound levels on a busy day are 69, 78, and 83 dBA DNL for the low, medium, and high scenarios, respectively, compared to a current estimated annual average sound level of 63 dBA DNL at that location. Note that the USAF is discussing with its cooperating agencies and the Commonwealth Port Authority potential mitigation measures to reduce the effects of noise on the surrounding area, and would present those measures in the Final EIS. Based upon operational restrictions agreed upon and implemented by the USAF, it is anticipated that noise levels on Saipan would be reduced during training exercises; hence, the noise levels reported here and in the Draft EIS are considered a “worst case” scenario and the USAF anticipates that the noise levels to be reported in the Final EIS would be less than reported here.

Reviews of the effects of sound on animals are available (see Dufour 1980, Mancini et al. 1988, Larkin et al. 1996, Efroymson et al. 2000, Kaesloo and Tyson 2004), and studies referenced in those reviews have documented that chronic exposure to continuous high sound levels (e.g., traffic, construction) and exposure to high sound energy impulses (e.g., sonic booms, aircraft overflight) can cause physical damage and hearing impairment; physiological effects; and changes in behavior, habitat use, and possibly reproduction. Efroymson et al. (2000) describe a framework for conducting ecological risk assessments of low-altitude overflights of military aircraft on wildlife, but concluded that there is insufficient information available to apply the risk assessment methodologies to songbirds.

Exposure to high sound levels can cause physical damage to the ear, which can result in temporary or permanent hearing loss (Dufour 1980). Studies of sound levels that can cause hearing impairment have been conducted on laboratory and domestic animals, primarily mammals, but few studies of impacts on birds, especially song birds, have been conducted. Larkin et al. (1996) described laboratory studies documenting that long-term exposure of canaries (*Serinus canaria domesticus*) to sound at 95 to 100 dB, and exposure of budgerigars (*Melopsittacus undulatus*) to impulse sound with a peak energy level of 169 dB, caused an increase in hearing threshold (i.e., the minimum level at which sound can be detected). However, these results might be of limited value for understanding whether the hearing of nightingale reed-warblers would be adversely affected by military jets, as there are substantial differences in the auditory sensitivity to intensity and frequency of sound among species (Dufour 1980, Larkin et al. 1996). Nightingale reed-warblers currently are exposed to sound from commercial jets that are similar in intensity to most military aircraft proposed to be used at GSN, but some aircraft, such as the F-22, are substantially louder, and the frequency of exposure to loud aircraft would be greater during military exercises. Male nightingale reed-warblers use calls to defend territories (Craig 1992) and probably to attract mates; therefore, temporary or permanent hearing loss could cause a decrease in reproductive fitness. Hearing impairment could also result in other adverse effects, such as an increase in mortality if reed-warblers could not hear approaching predators.

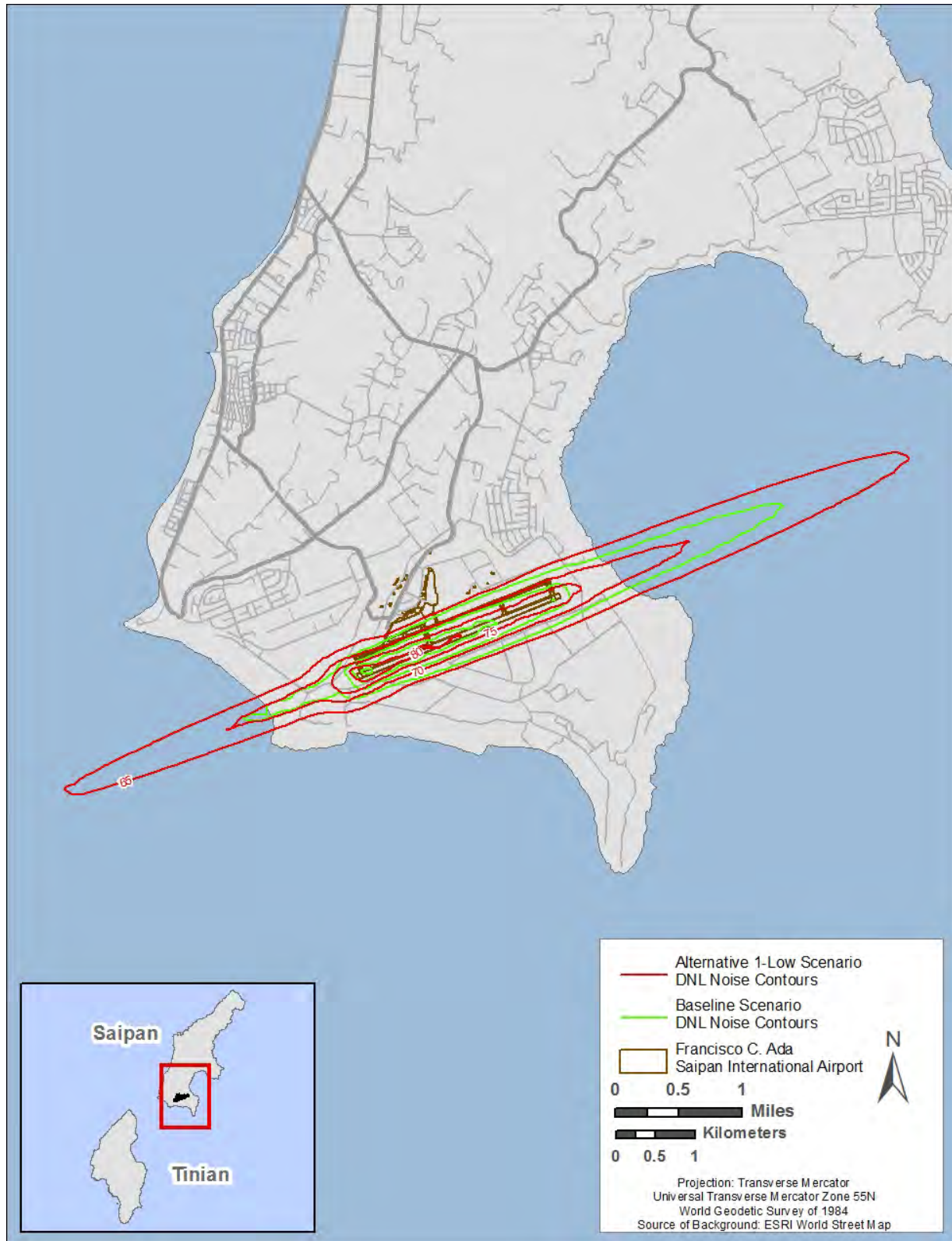


Figure 5-2. Low Scenario Predicted DNL Noise Contours (dBA) During a Military Exercise at GSN (USAF 2012)

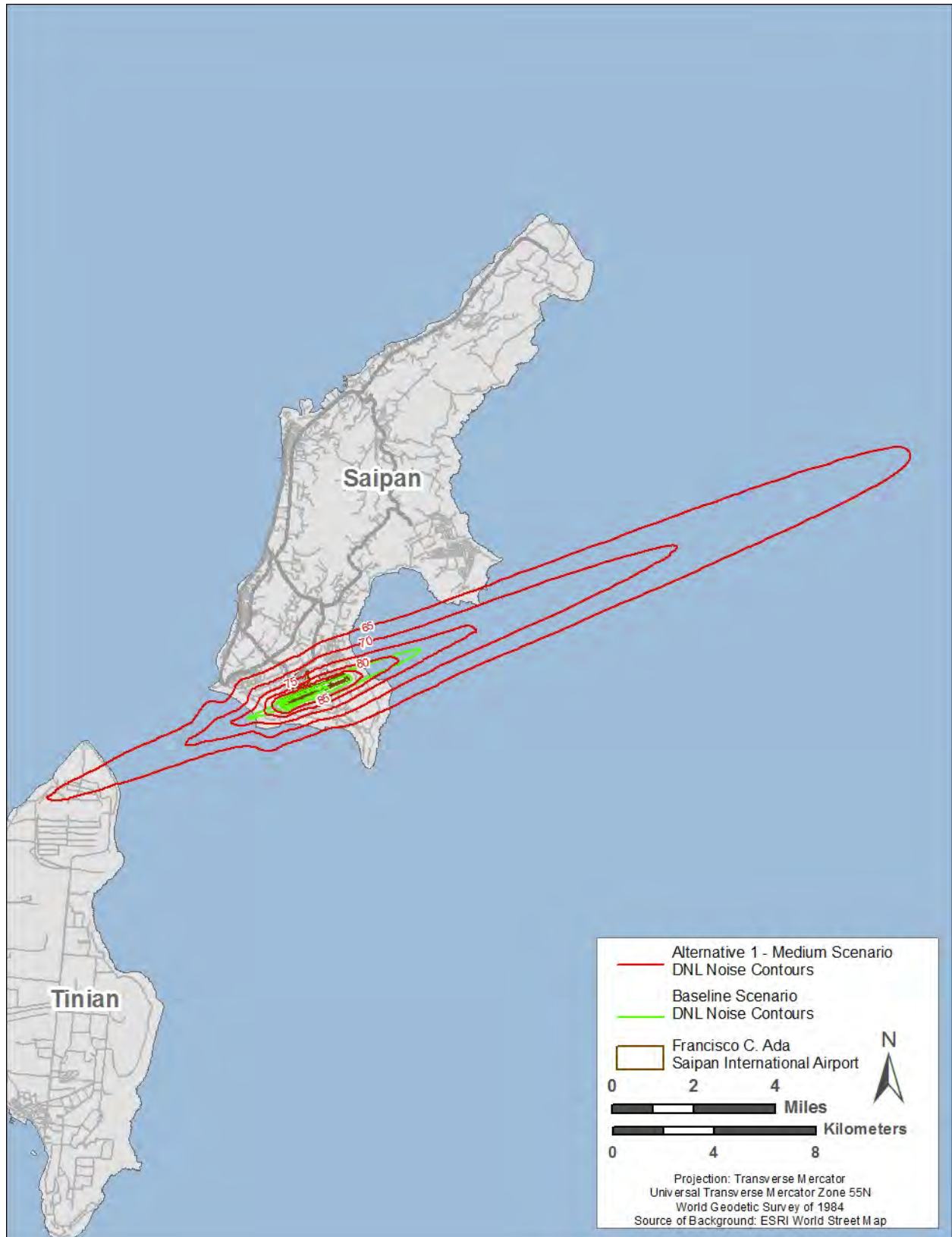


Figure 5-3. Medium Scenario Predicted DNL Noise Contours (dBA) During a Military Exercise at GSN (USAF 2012)

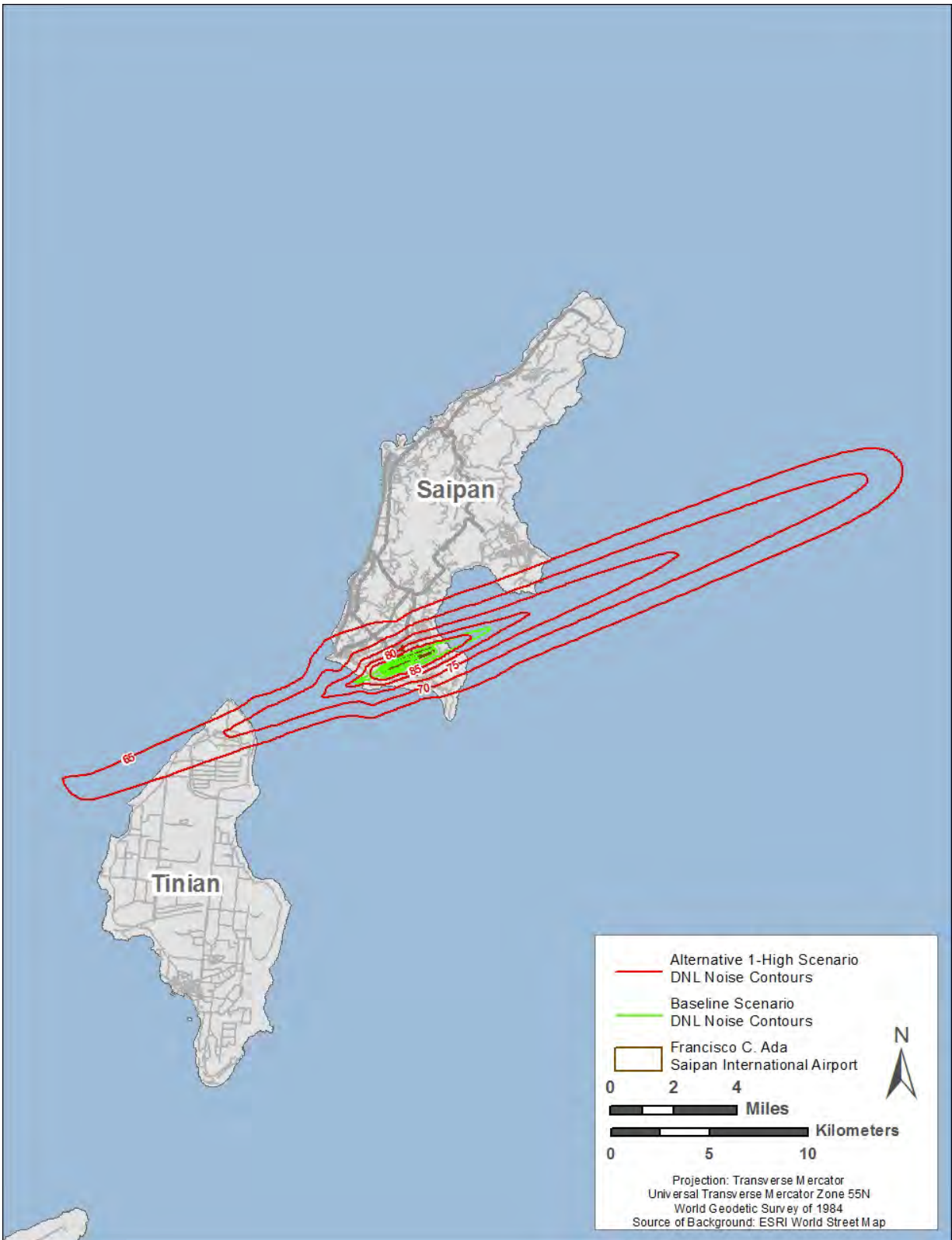


Figure 5-4. High Scenario Predicted DNL Noise Contours (dBA) During a Military Exercise at GSN (USAF 2012)



Figure 5-5. Predicted DNL Noise Contours (dBA) During a Military Exercise at GSN (medium scenario in USAF 2012)

1 Exposure to loud noises can also cause physiological changes in animals, such as an increase in blood
2 pressure and heart rate, changes in blood chemistry, and changes in digestive and respiratory functions.
3 Numerous studies of the physiological response of mammals to noise have been conducted (see reviews
4 by Dufour 1980, Mancini et al. 1988, Larkin et al. 1996), but no studies have been done to measure the
5 physiological response of wild songbirds to noise, or to evaluate the long-term consequences of those
6 physiological changes on the survival or reproductive fitness of wild animals.

7 The most likely, detectable response of nightingale reed-warblers to an increase in takeoffs and landings
8 of loud aircraft, and to other noises at GSN, might be a temporary or permanent change in behavior.
9 Birds have been documented to abandon nests temporarily or permanently, avoid areas, and otherwise
10 modify their behavior in response to noise. Efroymson et al. (2000) summarize more than 40 studies or
11 observations of the response of raptors and waterbirds to overflights. Responses varied substantially,
12 with some birds flushing or otherwise reacting in response to aircraft passing more than 1 km (0.6 miles)
13 away, but many birds not reacting, even in response to overflights closer than 100 m (330 feet). The
14 response to overflights can vary with season or timing of nesting, and probably also in response to
15 numerous other factors. For example, Mexican spotted owls (*Strix occidentalis lucida*) were less likely
16 to flush in response to noise early during nesting than later during the nesting season, but flush response
17 did not differ between the nesting and non-nesting season (Delany et al. 1999). Awbrey and Hunsaker
18 (1997) and Hunsaker et al (2007) documented a weak correlation between noise levels and number of
19 nesting attempts by coastal California gnatcatchers at Naval Air Station Miramar, but concluded that
20 noise from fixed-wing military aircraft and helicopters had no measurable effect on reproductive success.
21 Flushing from nests or other changes in behavior could have an effect on reproduction or survival. For
22 example, a sooty tern (*Onychoprion fuscatus*) colony had 99 percent nest failure in a year when low-
23 flying, supersonic aircraft frequently flew over the colony; nest failure might have been, in part, due to
24 damage to eggs as females rapidly left their nests (Mancini et al. 1988).

25 Birds and other wildlife have been documented to become habituated to aircraft overflights and other
26 noises after continuous or frequent exposure. For example, red-tailed hawks (*Buteo jamaicensis*) that
27 were previously exposed to helicopters exhibited less response than hawks that had not been previously
28 exposed (Andersen et al. 1989). Habituation also has been frequently noted when using noise-making
29 devices to scare birds away from crops or airfields (Larkin et al. 1999, Efroymson et al. 2000).
30 Nightingale reed-warblers living near GSN are exposed to numerous takeoffs and landings of commercial
31 jets daily and those birds, therefore, might not react in as strenuous a manner as unhabituated birds to the
32 infrequent and temporary increase in noise from divert activities and exercises.

33 Loud noises can also mask other sounds that are important to birds, such as territorial calls or the sounds
34 of approaching predators (Larkin et al 1996, Kaesloo and Tyson 2004). Because the noise from military
35 aircraft at GSN would be of short duration, most takeoffs and landings should not adversely affect
36 nightingale reed-warblers in this manner. However, if numerous aircraft take off and land over a short
37 period, nightingale reed-warblers might not be able to hear territorial calls or other sounds for an extended
38 period.

39 In summary, nightingale reed-warbler would be exposed to high sound levels when military aircraft take
40 off and land during exercises at GSN, which would occur up to 8 weeks per year. Those birds currently
41 are exposed to noise from commercial jets that are of similar or lower intensity than that of the military
42 aircraft that would operate at GSN. Similar disturbances and noise levels have caused other birds to flush
43 or leave their nests, and resulted in other adverse consequences. However, there is insufficient
44 information available to determine how nightingale reed-warblers at GSN would react to the increase in
45 frequency of loud overflights, and the increase in sound intensity during some of those overflights. In
46 addition, other than to generalize that nightingale reed-warblers with territories near GSN and directly

under the flight paths are more likely to be affected than birds living farther away, it is not possible to specify where or how many territories might be affected by an increase in operations of loud aircraft.

To mitigate for the impacts of noise and indirect impacts on nightingale reed-warblers that will occur during the implementation phase of this project, the USAF will purchase credits or otherwise fund conservation activities at the SUMB conservation area as required in the SUMB Biological Opinion.

5.1.3 Invasive Species

The USFWS lists predation by introduced species as one of the two main threats to the recovery of nightingale reed-warblers, and states that establishment of the brown treesnake on Saipan would result in the extirpation of that bird, as occurred on Guam (USFWS 2010b).

Brown treesnakes and other invasive species could be released into Saipan when personnel and equipment are transported from Guam and other locations for construction of facilities and during divert events and exercises. To prevent this from happening, the USAF would continue their ongoing program of interdicting the transport of invasive species in the Mariana Islands. As further described in **Section 2.4**, this would include the following:

- Developing and implementing a Hazard Analysis and Critical Control Point Plan during construction and maintenance and operation of facilities at GSN and the Port of Saipan
- Inspecting outgoing aircraft, equipment, and materials from Guam with trained quarantine officers and dog detection teams
- Use existing or new, temporary or permanent, snake-free quarantine areas on Saipan for inspection of cargo traveling from Guam to Saipan when applicable. Those areas will be subject to (1) multiple day and night searches with appropriately trained interdiction canine teams that meet performance standards, (2) snake trapping, and (3) visual inspections for snakes.
- Implementing other interdiction and control requirements in the applicable Biological Opinions (e.g., USFWS 2006a, 2010a) and associated implementing instructions for training exercises in the Mariana Islands including but not limited to the procedures in JTREGMARIANAS Instruction 5090.4 for inspection of equipment and gear.

5.1.4 Cumulative Effects

Reasonably foreseeable future activities that might occur on Saipan are described in Section 5.1 of the *EIS for Divert Activities and Exercises, Guam and Commonwealth of the Northern Mariana Islands* (USAF 2012). Future Commonwealth or private activities that are reasonably certain to occur within the action area include road development and widening; geothermal, solar, and other energy production; improvement and expansion of water, wastewater, power, and other public works systems; and development of commercial, residential, medical, and other facilities. Those activities, along with the USAF proposal to clear 4.5 ha (11.0 ac) of tangantangan forest to develop infrastructure at GSN, would contribute to the cumulative loss of habitat for the nightingale reed-warbler on Saipan. Those activities would also cause an increase in noise during construction, habitat degradation, other indirect impacts that would cumulatively adversely affect nightingale reed-warblers and possibly other ESA protected species on Saipan.

5.2 Mariana Common Moorhen

A single Mariana common moorhen was observed during four of nine surveys of the east golf course pond, which is about 0.9 km (0.6 mi) southwest of GSN. That pond has an impervious liner that prevents the establishment of shoreline emergent vegetation and the surrounding vegetation is mowed or maintained for operation of the golf course. Moorhens nest in wetlands with emergent vegetation (USFWS 1992), and it is, therefore, unlikely that moorhens nest at that pond. No moorhens were seen at the two other surface waters surveyed near GSN (see **Section 4.4**).

During planned joint military exercises or other unit-level exercises, any moorhens located at the golf course pond would be exposed to more frequent takeoffs or landing of aircraft. Sound levels from those aircraft would be similar to or louder than the commercial jets at GSN. Noise from the take-off and landing of those aircraft might cause Mariana common moorhens using that or other surface waters near GSN to temporarily disrupt their behavior. However, because any bird using those ponds would be habituated to frequent noise from current operations at GSN, and because the increase in noise from divert activities and exercises would be infrequent, it is very unlikely that Mariana common moorhen would avoid the use of those ponds.

Because (1) the surface waters near GSN are marginal habitat that are used temporarily by moorhens, (2) birds there likely are habituated to noise from current operations at GSN, (3) any increase in noise from divert activities and exercises would be temporary and infrequent, and (4) the ongoing program for interdicting the transport of brown treesnakes and other invasive species in the Mariana Islands would be implemented for this project (see **Section 2.4**), the USAF concludes that any adverse impacts would be temporary and insignificant, and that developing divert capabilities and conducting divert activities and exercises at GSN may affect, but are unlikely to adversely affect, Mariana common moorhens.

5.3 Mariana Swiftlet

Mariana swiftlets nest in caves located in central Saipan (Cruz et al. 2008) and favor ridge crests and open, grassy areas for foraging (USFWS 1991). No swiftlets were detected during bird surveys conducted at GSN during 2012, and the nearest cave used by these birds for roosting and nesting is more than 3 km (2 mi) north of GSN (MES 2012).

The clearing of up to 4.5 ha (11.0 ac) of second-growth forest for this project would have an insignificant adverse effect on the availability of foraging habitat for this species because tangantangan forest is common in the area and is not preferred foraging habitat. In addition, any adverse effect would be offset by the benefit of long-term protection of forest habitat in the SUMB that would be funded by the Air Force to compensate for the loss of nightingale reed-warbler habitat. The possibility of a swiftlet being harmed by aircraft during divert activities and exercises is discountable because the area is distant from nesting caves, the second-growth forests at the end of the runways are not preferred foraging habitat, and swiftlets likely avoid the busy airspace around GSN. For these reasons, the USAF concludes that developing divert capabilities and conducting divert activities and exercises at GSN may affect, but are not likely to adversely affect, Mariana swiftlets.

5.4 Green Sea Turtles

Up to 18 green sea turtles nests have been found annually on Saipan since 1999 (Kolinski et al. 2001, Maison et al. 2010). Nesting habitat for this species would not be directly affected by this project. However, green sea turtles nesting on beaches of southern Saipan, and hatchling turtles moving from nests to the ocean, could be temporarily exposed to noise from military aircraft participating in divert

1 activities or exercises (DON 2010). Exposure to elevated noise levels would be brief (seconds) and, with
2 the exception of emergency divert landings and associated take-offs, would occur over a period of no
3 more than 8 weeks of the year. Any behavioral avoidance reaction would be short-term and would not
4 permanently displace sea turtles or result in physical harm. Noise from take-offs and landing would not
5 result in chronic stress because it is unlikely that individual sea turtles would be repeatedly exposed to
6 low-altitude overflights. Therefore, any effects would be insignificant and would not be sufficient to
7 harm or harass sea turtles, and the USAF concludes that developing divert capabilities and conducting
8 divert activities and exercises at GSN may affect, but are not likely to adversely affect, green sea turtles in
9 terrestrial environments.

6. Conclusions

Based on the description of the project in **Section 2** of this BA and further described in the associated EIS (USAF 2012), the status of species and environmental baseline described in **Sections 3** and **4**, and the analysis of impacts in **Section 5**, the USAF concludes the following about the potential impacts on threatened and endangered species from developing divert capabilities and conducting divert activities and exercises at GSN.

- The proposed project will have no affect on Mariana fruit bat and Micronesian megapodes
- The proposed project may affect, but is unlikely to adversely affect, the Mariana common moorhen, Mariana swiftlet, and nesting green sea turtle
- The proposed project may affect, and is likely to adversely affect, the nightingale reed-warbler.

1

THIS PAGE INTENTIONALLY LEFT BLANK

7. References

- Anderson et al. 1989 Andersen, D.E., O.J. Rongstad, and W.R. Mytton 1989. Response of nesting Red-tailed Hawks to helicopter overflights. *Condor* 91:296-299.
- Anderson et al. 1990 Andersen, D.E., O.J. Rongstad, and W.R. Mytton. 1990. Home-range changes of raptors exposed to increased human activity levels in southeastern Colorado. *Wildlife Society Bulletin* 18:134-142.
- Awbrey and Hunsaker 1997 Awbrey, F.T., and D. Hunsaker. 1997. Effects of fixed-wing military aircraft noise on California gnatcatcher reproduction. *Journal of the Acoustical Society of America* 102:3177.
- Commonwealth Ports Authority 2002 Commonwealth Ports Authority. 2002. Saipan International Airport Master Plan. April 2002.
- Camp et al. 2009 Camp, R.J., T.K. Pratt, A. P. Marshall, F. Amidon, and L.L. Williams. 2009. Recent status and trends of the land bird avifauna on Saipan, Mariana Islands, with emphasis on the endangered nightingale reed-warbler *Acrocephalus luscini*. *Bird Conservation International* 19:323-337.
- Cibois et al. 2011 Cibois, A. J.S. Beadell, E. Pasquet, B. Slikas, S.A. Sonsthagen, J-C. Thibault, and R.C. Fleischer. 2011. Charting the course of reed-warblers across the Pacific islands. *Journal of Biogeography* 30: 1963–1975.
- Craig 1992 Craig, R.J. 1992. Territoriality, habitat use and ecological distinctness of an endangered Pacific island reed-warbler. *Journal of Field Ornithology* 63:436–444.
- Cruz et al. 2008 Cruz, J.B., S.R. Kremer, G. Martin, L.L. Williams, and V.A. Camacho. 2008. Relative abundance and distribution of Mariana swiftlets (Aves: Apodidae) in the northern Mariana Islands. *Pacific Science* 62:233-246.
- DON 2010 DON (Department of the Navy). 2010. *Mariana Islands Range Complex Final Environmental Impact Statement/Overseas Environmental Impact Statement*. May 2010. Volume 1.
- Delany et al. 1999 Delaney, D.K., T.G. Grubb, P. Beiber, L.L. Pater, and M.H. Reiser. 1999. Effects of helicopter noise on Mexican spotted owls. *Journal of Wildlife Management* 63:60-76.
- Dufour 1980 Dufor, P.A. 1980. Effects of noise on wildlife and other animals: Review of research since 1971. U.S. Environmental Protection Agency. EPA 550/9 BO-00. Washington, D.C.
- Efroymson et al. 2000 Efroymson, R.A., R.A. Rose, S. Nemeth, and G.W. Suter II. 2000. Ecological risk assessment framework for low-altitude overflights by fixed-wing and rotary-wing military aircraft. Oak Ridge National Laboratories, Environmental Sciences Division. Publication 5010. Oak Ridge, Tennessee.

Hunsaker et al. 2007	Hunsaker, D., J. Rice, and J. Kern. 2007. The effects of helicopter noise on the reproductive success of the coastal California gnatcatcher. <i>Journal of the Acoustical Society of America</i> . 122:3058.
Kaseloo and Tyson 2004	Kaseloo, P.A., and K.O. Tyson. 2004. Synthesis of noise effects on wildlife populations. U.S. Department of Transportation, Federal Highway Administration. FHWA-HEP-06-016. McLean, Virginia.
Kolinski et al. 2001	Kolinski, S.P., D.M. Parker, L.I. Ilo, and J.K. Ruak. 2001. An assessment of the sea turtles and their marine and terrestrial habitats at Saipan, Commonwealth of the Northern Mariana Islands. <i>Micronesica</i> 34:55-72.
Larkin et al. 1996	Larkin, R.P., L.L. Pater, and D.J. Tazik, D.J. 1996. Effects of military noise on wildlife: A literature review. U.S. Army Construction Engineering Research Laboratories Technical Report 96/21. Champaign, Illinois.
Maison et al 2010	Maison, K.A., K.I. Kinain, and K.P. Frutchey. 2010. Green turtle nesting sites and sea turtle legislation throughout Oceania. U.S. National Oceanic and Atmospheric Administration Memorandum NMFS-F/SPO-110.
Manci et al. 1988	Manci, K.M., D.N. Gladwin, R. Villella, and M.G. Cavendish. 1988. Effects of aircraft noise and sonic booms on domestic animals and wildlife: a literature synthesis. U.S. Fish and Wildlife Service. National Ecology Research Center, NERC-88/29. Ft. Collins, Colorado.
MES 2012	Micronesian Environmental Services (MES). 2012. Biological Report: Saipan International Airport Project Site, Saipan, CNMI. Saipan, Commonwealth of the Northern Mariana Islands.
Mosher 2006	Mosher, S.M. 2006. Ecology of the endangered nightingale reed-warbler (<i>Acrocephalus luscini</i>) on Saipan, Micronesia. Master's Thesis, University of Idaho, Moscow, Idaho.
Mosher and Fancy 2002	Mosher, S.M. and S.G. Fancy. 2002. Description of nests, eggs, and nestlings of the endangered nightingale reed-warbler on Saipan, Micronesia. <i>Wilson Bulletin</i> 114:1-10.
NMFS 1998	NMFS (National Marine Fisheries Service). 1998. Recovery Plan for the U.S. Pacific Populations of the East Pacific Green Turtle. National Marine Fisheries Service, Silver Spring, Maryland and U.S. Fish and Wildlife Service, Portland Oregon.
NMFS 2011	NMFS. 2011. National Marine Fisheries Service Endangered Species Act Section 7 Biological Opinion for Military Readiness Activities on the Mariana Islands Range Complex. National Marine Fisheries Service Office of Protected Resources, Washington D.C. August 2011.
Takano and Haig 2004	Takano, L.L., and S.M. Haig. 2004. Distribution and Abundance of the Mariana Subspecies of the Common Moorhen. <i>Waterbirds</i> 27:245-250.

USAF 2012	U.S. Air Force (USAF). 2012. Draft Environmental Impact Statement for proposed Divert Activities and Exercises, Guam and Commonwealth of the Northern Mariana Islands (CNMI). Pacific Air Forces, Joint Base Pearl Harbor-Hickam, Hawaii.
USDA 2008	U.S. Department of Agriculture (USDA). 2008. Wildlife Hazard Assessment: Francisco C. Ada, Saipan International Airport. Saipan, Commonwealth of the Northern Mariana Islands. August 2008.
USFWS 1991	U.S. Fish and Wildlife Service (USFWS). 1991. Recovery Plan for the Mariana Islands Population of the Vanikoro Swiftlet, <i>Aerodramus vanikorensis bartschi</i> . Portland, Oregon.
USFWS 1992	USFWS 1992. Recovery Plan Mariana Common Moorhen <i>Gallinula chloropus guami</i> . Region One, Portland, Oregon.
USFWS 1998a	USFWS 1998. Recovery Plan for the Micronesian Megapode (<i>Megapodius laperouse laperouse</i>). Portland, Oregon.
USFWS 1998b	USFWS 1998. Recovery Plan for the Nightingale Reed-Warbler (<i>Acrocephalus luscini</i>). Portland, Oregon.
USFWS 2006a	USFWS 2006. Biological Opinion on the Establishment and Operation of an Intelligence, Surveillance, Reconnaissance, and Strike Capability Project on Anderson Air Force Base, Guam. 1-2-2006-F-266. Honolulu, Hawaii.
USFWS 2006b	USFWS 2006. Final Biological Opinion for the Proposed Rehabilitation of Runway 07/25 and Relocation of water Catchment Reservoir, Saipan International Airport, Commonwealth of the Northern Mariana Islands. 1-2-2006-F-741. Honolulu, Hawaii.
USFWS 2008a	USFWS. 2008. Programmatic Biological Opinion Regarding the Reestablishment, Management, and Use of the Saipan Upland Mitigation Bank, Saipan. 2008-F-0033. Honolulu, Hawaii.
USFWS 2008b	USFWS 2008. Biological Opinion for the Joint Guam Program Office Relocation of the U.S. Marine Corps from Okinawa to Guam and Associated Activities on Guam and Tinian. 2010-F-0122. Honolulu, Hawaii.
USFWS 2009a	USFWS 2009. Draft Revised Recovery Plan for the Mariana Fruit Bat or Fanahi (<i>Pteropus mariannus mariannus</i>). Portland, Oregon.
USFWS 2009b	USFWS 2009. Mariana Common Moorhen 5-Year Review Summary and Evaluation. Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii.
USFWS 2009c	USFWS 2009. Recommended Survey Guidelines for the Nightingale Reed-Warbler. Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii.
USFWS 2010a	USFWS 2010. Biological Opinion for the Mariana Islands Range Complex, Guam and the Commonwealth of the Northern Mariana Islands 2010-2015. 2009-F-0345. Honolulu, Hawaii.

- USFWS 2010b USFWS 2010. Nightingale Reed-Warbler (*Acrocephalus luscini*a) 5-Year Review Summary and Evaluation. Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii.
- USFWS 2010c USFWS 2010. Mariana Swiftlet or Chachaguak (*Aerodramus bartschi*) 5-Year Review Summary and Evaluation. Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii.
- USFWS 2011a USFWS 2011. Guam and Commonwealth of the Northern Mariana Islands Animal & Plants: Updated February 2, 2011. Listed Species, as Designated Under the Endangered Species Act. << <http://www.fws.gov/pacificislands/species.html>>> (downloaded March 5, 2012).
- USFWS 2011b USFWS 2011. U.S. Fish and Wildlife Service Species Assessment and Listing Priority Assignment Form, *Hypolimnas octucula mariannensis*. <<<http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=I0R7>>> (downloaded June 5, 2012).
- USFWS 2011c USFWS 2011. U.S. Fish and Wildlife Service Species Assessment and Listing Priority Assignment Form, *Partula gibba*. <<<http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=G0AC>>> (downloaded June 5, 2012).
- Valdez et al. 2011 Valdez, E.W., G.J. Wiles, and T.J. O'Shea. 2011. Diets of the sympatric Pacific sheath-tailed bat (*Emballonura semicaudata rotensis*) and Mariana swiftlet (*Aerodramus bartschi*) on Aguiguan, Mariana Islands. Pacific Science 65:301–309.



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:
2012-F-0445

JUN 27 2013

Mr. Marc M. Aoyama, P.E.
Chief, Programs Division
Directorate of Installations and Mission Support
Department of the Air Force
Pacific Air Forces
25 E Street, Suite D-306
Joint Base Pearl Harbor-Hickam, Hawaii 96853

Subject: Formal Consultation for Divert Activities and Exercises at the Saipan
International Airport, Commonwealth of the Northern Mariana Islands

Dear Mr. Aoyama:

This document represents the U.S. Fish and Wildlife Service's (Service) Biological Opinion on the U.S. Air Force's (USAF) proposed Divert Activities and Exercises (Divert) at the Saipan International Airport (GSN) in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C 1531 et seq.). This Biological Opinion addresses the potential impacts of Divert on the endangered nightingale reed-warbler (*Acrocephalus luscini*a). Your request for formal consultation was received on September 10, 2012. An informal consultation addressing potential impacts to the endangered Mariana moorhen (*Gallinula chloropsis guami*), Mariana swiftlet (*Aerodramus bartschi*), and threatened green sea turtle (*Chelonia mydas*), is found in Appendix 1.

Overall island-wide effects to the nightingale reed-warbler are addressed through the October 23, 2008, *Programmatic Biological Opinion Regarding the Reestablishment, Management, and Use of the Saipan Upland Mitigation Bank, Saipan* (2008-F-0033) (Programmatic Biological Opinion). The Programmatic Biological Opinion addressed the creation of the Saipan Upland Mitigation Bank (SUMB) to protect and manage 419 hectares of land on Saipan in perpetuity for the nightingale reed-warbler. The findings and recommendations in this consultation are based on: (1) the USAF Biological Assessment for Divert received on September 10, 2012; (2) phone calls, meetings, and emails between Rachel Rounds (Service) and the USAF and its contractors; (3) the SUMB Programmatic Biological Opinion and; (4) other information available to us. A complete administrative record is on file in our office.

CONSULTATION HISTORY

June 17, 2013. The USAF and the Service agree upon final language for the invasive species conservation measures.

May 9, 2013. The Service provided the USAF with proposed edits to the invasive species section of conservation measures.

April 10, 2013. The USAF provided the Service with a re-written rapid response conservation measure which is acceptable to both agencies.

March 13, 2013. The USAF and Service had a phone call to further discuss the rapid response conservation measure in the draft Biological Opinion.

February 27, 2013. The Service provided USAF with revised invasive species conservation measures for their review.

February 26, 2013. The Service (Rachel Rounds and Domingo Cravalho) had a phone call with USAF and U.S. Navy staff and contractors (William Grannis, Kurt Rautenstrauch, Steve Pyle, Carol Gaudette, Lieutenant Colonel Alves, Steve Mosher, Lance Laughmiller, Mark Cruz, Edward Lynch, Mark Petersen) to discuss invasive species conservation measures.

February 14, 2013. The USAF provided the Service with comments on the draft Biological Opinion.

February 1, 2013. The Service provided the USAF with a draft Biological Opinion for review.

January 25, 2013. William Grannis (USAF) provided Rachel Rounds (Service) with an updated project description.

January 14, 2013. William Grannis (USAF) called Rachel Rounds (Service) to notify the Service that the USAF would like to purchase 17 credits in the SUMB to offset impacts to the nightingale reed-warbler.

December 12, 2012. The Service (Rachel Rounds, Earl Campbell, Brand Phillips, and Domingo Cravalho) had a phone call with USAF staff and contractors (William Grannis, Kurt Rautenstrauch, Shannon Cauley, Steve Pyle, Carol Gaudette, Mark Ingoglia, and Lieutenant Colonel Alves) had a conference call to discuss invasive species conservation measures.

November 16, 2012. William Grannis (USAF) sent Rachel Rounds (Service) a revised project description.

October 18, 2012. Kurt Rautenstrauch (HDR) provided Rachel Rounds (Service) with maximum noise estimates for four aircraft types and 10 locations around GSN.

October 11, 2012. Rachel Rounds (Service) and USAF staff and contractors (William Grannis, Daniel Robinson, Dale Clark, Steve Pyle, Julie Hong, Major Toves, Kurt Rautenstrauch, Tanya Perry) had a phone call to discuss the timeline for re-initiation of the Biological Opinion, the noise disturbance analysis, and joint military training exercises.

October 1, 2012. Rachel Rounds and Domingo Cravalho (Service) and USAF staff and contractors (William Grannis, Major Toves, Kurt Rautenstrauch, Shannon Cauley, Steve Pyle, and Edward Lynch) had a phone call to discuss SUMB credit purchases, Biological Opinion timeline, and brown treesnake conservation measures.

September 20, 2012. Rachel Rounds (Service) and USAF staff and contractors (William Grannis, Julie Hong, Major Toves, Bernie Marcos, Shannon Cauley, and Kurt Rautenstrauch) had a phone call to discuss conservation measures, SUMB credit purchases, monitoring projects, and the Divert training schedule.

September 18, 2012. Rachel Rounds (Service) sent William Grannis (USAF) a list of questions on the Divert Biological Assessment.

September 10, 2012. The Service received the Final Biological Assessment from the USAF.

July 26, 2012. Rachel Rounds (Service) and USAF staff and contractors (William Grannis, Edward Lynch, Stephen Pyle, Shannon Cauley) had a phone conversation to discuss Service comments on the draft Biological Assessment.

July 19, 2012. The USAF submitted a draft Biological Assessment to the Service for review.

May 31, 2012. The USAF and its contractors (Kurt Rautenstrauch, William Grannis, Mark Ingoglia, Edward Lynch, Mark Petersen, Shannon Cauley, and Major Pete Toves) and Service staff (Rachel Rounds and Earl Campbell) met to discuss the results of threatened and endangered species surveys at the Saipan International Airport and the section 7 consultation process.

July 15, 2011. USAF and its contractors (Edward Lynch, Carol Gaudette, William Grannis, Shannon Cauley, Julie Hong, and Mark Ingoglia) presented to the Service (Loyal Mehrhoff, Earl Campbell, Annie Marshall, Steve Miller, Fred Amidon, Domingo Cravalho, and Rachel Rounds) initial information regarding the Divert Project, discussed threatened and endangered species in the potential project areas, and discussed the section 7 consultation process.

ACTION AREA

The action area for the proposed project is the airport and surrounding areas (Figure 1), the seaport (Figure 2), and the Saipan Upland Mitigation Bank Conservation Area, which will be used for mitigation actions.

Figure 1. Proposed Facilities at Saipan International Airport

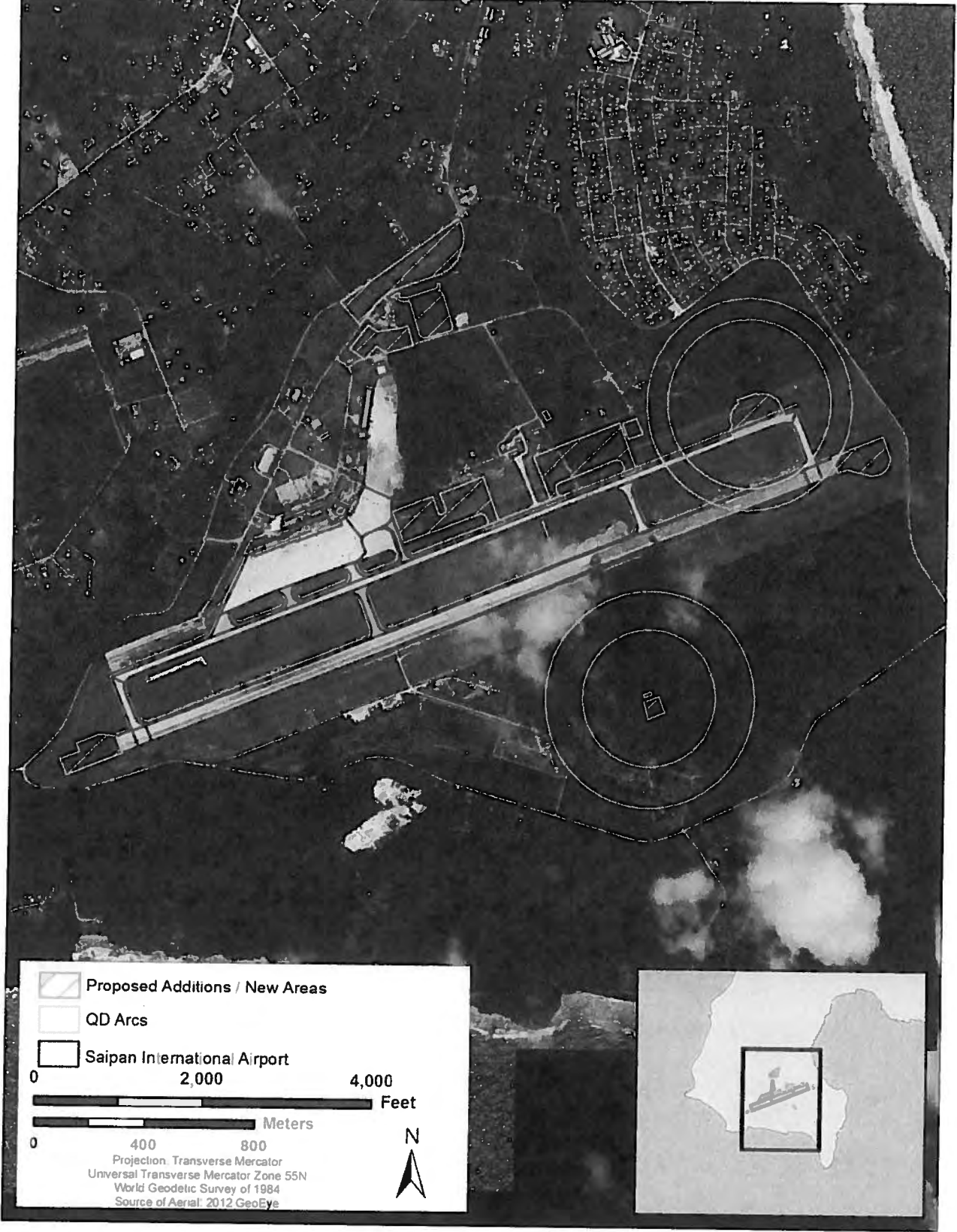
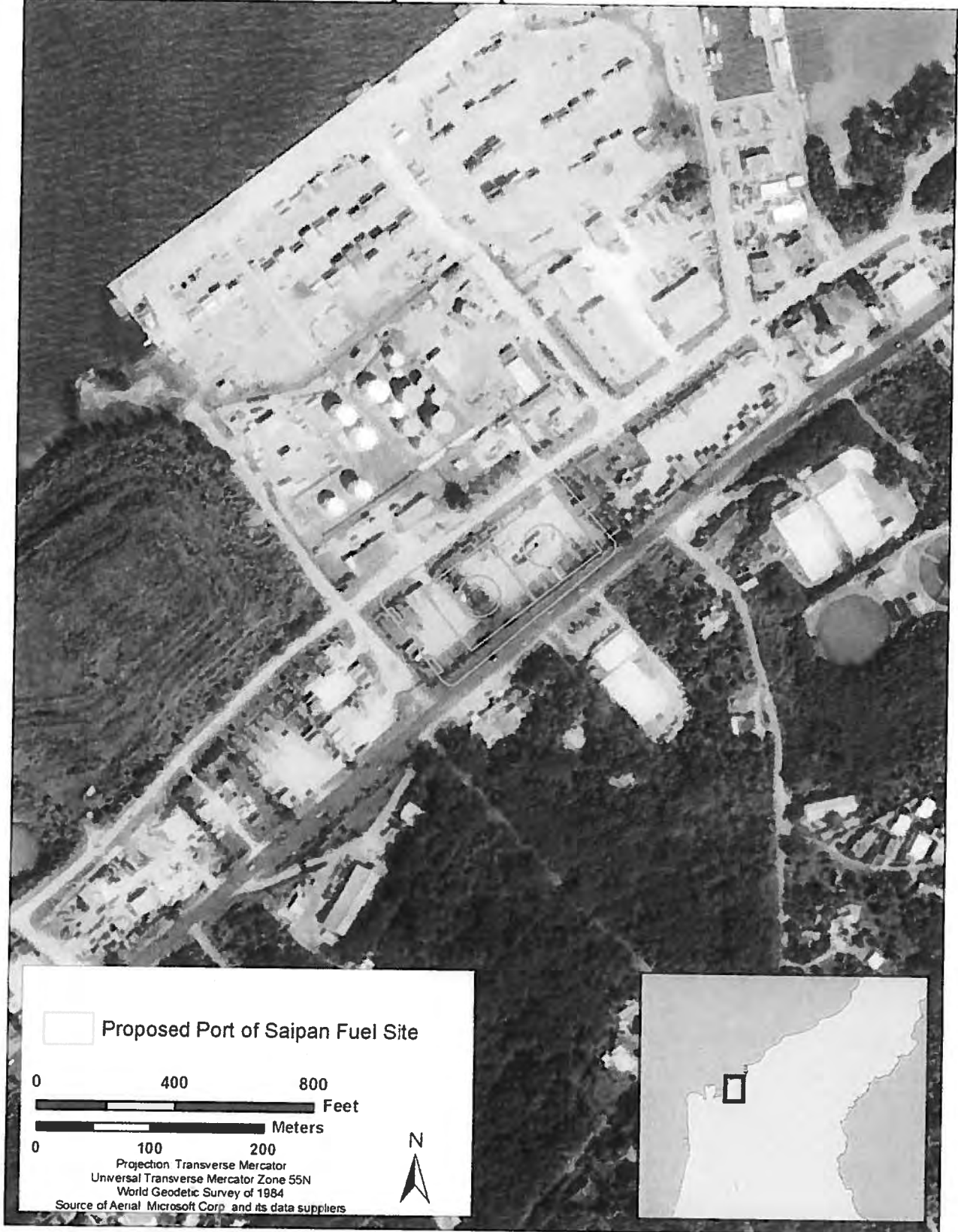


Figure 2. Proposed Facilities at Seaport of Saipan

DESCRIPTION OF THE PROPOSED ACTION

The Biological Assessment for Headquarters Pacific Air Forces Divert Activities and Exercises in Saipan fully describes the proposed construction and implementation of the Divert Project and is incorporated by reference herein. A brief description of the proposed action is provided below. This Biological Opinion will include effects from construction, training, joint military exercises, and humanitarian exercises for the lifetime of the Divert action. The purpose of the Divert project is to establish divert activity capabilities to support and conduct current, emerging, and future exercises, while ensuring the capability to meet mission requirements in the event that access to Andersen Air Force Base on Guam, or other western Pacific locations, is limited or denied. The need for humanitarian assistance can arise suddenly and without warning, such as disaster response in Japan during the 2011 earthquake and tsunami. Because of the proximity to forward-deployed forces in the western Pacific, the Marianas provides the best alternative for forward-deployed U.S. forces to train on U.S.-owned lands and to develop the proposed additional divert capabilities.

Construction

Saipan International Airport

The USAF proposes to construct and expand facilities at GSN. New facilities could include an expanded runway; associated pavement markings and lighting; parking aprons; a temporary munitions storage area; a hazardous cargo aircraft parking pad; an arm/disarm pad; an aircraft hangar; a maintenance facility; a jet fuel receiving, storage and distribution system; and navigational aids. Temporary billeting facilities for up to 700 personnel may also be developed adjacent to the airport. The total size of the facilities, if they are all constructed, would be about 24 hectares (59 acres).

Seaport of Saipan

Two hectares (approximately five acres) would be developed at the Port of Saipan for construction of fuel storage tanks. Two aboveground 2.1-million gallon tanks and associated piping would be constructed near the seaport on federally leased land. The site is located adjacent to the U.S. Army Reserve Center between Beach Road and Middle Road. Existing infrastructure at the port would be used to offload fuel from vessels. The site is in an industrial area that has been previously developed.

The timeline of Phase 1 construction is expected to be 24 to 36 months with geotechnical surveys beginning in 2013. The construction schedule for Phase 2 construction is not yet established.

Implementation

After completion of facility construction, the USAF would use GSN periodically and temporarily for ground and air activities, aircraft support activities, and other airfield ground support activities. A mix of joint cargo, tanker, fighter, and other aircraft could be diverted to or fly from the airfield. Implementation activities conducted might include, but are not limited to, divert landings and take-offs, joint military exercises, jet fueling and storage, humanitarian assistance and disaster relief airlift staging including non-combatant evacuation operations, and billeting. Implementation activities are expected to begin in 2016 or 2017.

Joint military exercises at GSN may include scheduled joint, combined, and unit-level military training activities and exercises, as described and analyzed in the Mariana Island Range Complex Environmental Impact Statement (EIS) (U.S. Navy 2010) and Biological Opinion (USFWS 2010). Aircraft and personnel participating in these combined exercises would be temporarily located at and operate from GSN for a combined total of about 60 days (eight weeks) per year. An exercise could last approximately two weeks. No more than 700 personnel would participate in exercises at GSN at any given time. Humanitarian and divert exercises would be short-term events.

A mix of joint fighter, cargo, and tanker aircraft, not to exceed the airport parking capacity could be diverted to or exercised from GSN. A maximum of six tankers or 12 fighters, or a mix of those aircraft, could operate from GSN if one parking apron is constructed. If the second parking apron is constructed, a total of 12 tankers, or 24 fighters, or a mix of those aircraft, could operate from GSN. The exact mixture of aircraft used during implementation will vary depending on mission requirements. Aircraft that would be used for joint military exercises include cargo, air mobility, and refueling aircraft such as the KC-135, and tactical or fighter aircraft such as the F-16, and F-22. The maximum capacity of aircraft anticipated to be used at GSN at any one exercise or Divert event is 24 fighters or 12 tankers, based on the construction of two parking aprons. Military exercises are anticipated to occur no more than eight weeks per year, such as in four, two-week exercises; however, longer exercises of up to four weeks could occur. The ongoing joint military exercises, including joint multi-carrier strike group and joint combined exercises, could constitute four of the eight weeks of training under Divert. To model worst-case noise for an average busy day during a military exercise event, the USAF estimated that each aircraft would complete four operations per day (two arrivals and two departures). The USAF assumed that 90 percent of aircraft operations would occur during the day (7 a.m. to 10 p.m.) and 10 percent at night (10 p.m. to 7 a.m.).

In the Divert Draft EIS (USAF 2012), the USAF modeled baseline, low, medium, and high scenarios for military exercises. The USAF anticipates that the Divert military exercises covered by this Biological Opinion will fall in the range of the low and medium scenarios presented in the Draft EIS. In the baseline scenario (current conditions) approximately 140 flights operate out of GSN on a daily basis. The mix and type of aircraft assumed for each modeled scenario is based on construction of two parking aprons and could result in 12 KC-135 under the low scenario, 6 KC-135, 8 F-16, and 4 F-22 under the medium scenario, and 12 F-16 and 12 F-22 under the high scenario. Under the low scenario the number of tanker/cargo aircraft flights (a flight is a take-off and landing) per day would increase to 152 (an increase of 12 flights). Under the medium scenario the number of flights per day would increase to 164 (an increase of 24 flights). Under the high scenario the number of flights per day would increase to 202 (an increase of 62 flights).

Conservation Measures

The following conservation measures, developed in coordination with the Service, will avoid or minimize effects to the nightingale reed-warbler. They are considered part of the project description. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinitiate this consultation.

Construction

1. The USAF will purchase one credit in the Saipan Upland Mitigation Bank prior to any construction of the east parking apron (Figure 3). If a credit for Territory Six (see Figure 3) has already been purchased for implementation actions (fighter jet flights) then a credit for Territory Six will not need to be purchased a second time. In accordance with the Nightingale Reed-Warbler Programmatic Consultation and Saipan Upland Mitigation Bank Agreement and Addendum, the agreed-upon credit purchase will be as follows:
 - a. Prior to the start of any vegetation clearing or earth-moving activities at the East Parking Apron, the USAF shall purchase one credit at the Saipan Upland Mitigation Bank, which is intended to provide 1.75 nightingale reed warbler territories within the Bank boundary.
 - b. Upon written notification that the credit has been purchased (i.e., the CNMI government has received and deposited the funds required to purchase the credit, specified under 1.a. above, within the Commonwealth Mitigation Bank Revolving Fund authorized under CNMI P.L. 10-84 and a receipt is sent to the Service documenting the deposit), the Service will provide a letter to the USAF indicating that the credit purchase obligation has been fulfilled and on-site project activities may begin as outlined within the project description above and the remainder of the conservation measures listed below.
2. Clearing of vegetation at the east parking apron will only occur between October through December or April through June, when nightingale reed-warbler nesting activity is not at its peak.
3. The USAF will not locate a laydown yard or other temporary construction facilities in nightingale reed-warbler habitat or within a 50-meter buffer zone around reed-warbler territories.
4. When possible, the use of very noisy (greater than 60 decibels A-weighted (dBA)) heavy machinery should be limited to the non-active or non-peak breeding seasons or temporary noise barriers or buffer zones should be installed to protect nightingale reed-warblers using buffer zones or areas of connectivity.
5. Adequate plastic construction fencing will be placed and maintained around any habitat that is to be avoided (including buffer areas and adjacent parcels) to prevent impacts to habitat from construction equipment and personnel.
6. All on-site construction personnel will receive instructions regarding the presence of listed species and the importance of avoiding and minimizing impacts to these species and their habitat.
7. All on-site personnel will receive instruction regarding the brown treesnake (*Boiga irregularis*) and what to do immediately in case of a sighting.
8. The USAF will ensure that no unauthorized take of nightingale reed-warbler or destruction of their habitat occurs. The USAF will have the authority to stop all activities that may

Figure 3. Nightingale reed-warbler territories in northeast survey area.

result in such take or destruction until appropriate corrective measures have been completed. The USAF will report immediately any unauthorized impacts to the Service and CNMI DFW.

9. A litter-control program will be implemented during construction. All tools, gear, and construction scrap will be removed upon completion of work in order to prevent the attraction of non-native pests (e.g., rats). All workers will ensure their food scraps, paper wrappers, food containers, cans, bottles, and other trash from the project area are deposited in covered or closed trash containers. The trash containers shall be removed from the project area and disposed of off-site at an approved landfill at the end of each working day.
10. A brief summary report will be provided to the Service within 30 days of construction implementation to document implementation of any fencing, buffer zones, and minimization measures.

Implementation

To offset impacts from noise disturbance and habitat degradation resulting from implementation of joint military exercises as proposed in the Divert EIS, the USAF will purchase seventeen credits in the SUMB. These credits will be purchased prior to initiation of any proposed Divert exercises out of GSN that use fighter-type jet aircraft. It is expected that proposed Divert exercises will begin in 2016 or 2017. If a credit for Territory Six, which will be cleared for the east parking apron, has already been purchased then a credit for Territory Six will not need to be purchased a second time. In accordance with the Nightingale Reed-Warbler Programmatic Consultation and Saipan Upland Mitigation Bank Agreement and Addendum, the agreed-upon credit purchase will be as follows:

- a. Prior to the start of proposed Divert exercises out of GSN that use fighter-type jet aircraft, the USAF shall purchase seventeen credits at the Saipan Upland Mitigation Bank, which is intended to provide 29.75 nightingale reed warbler territories within the Bank boundary.
- b. Upon written notification that the credit has been purchased (i.e., the CNMI government has received and deposited the funds required to purchase the credit, specified under 1.a. above, within the Commonwealth Mitigation Bank Revolving Fund authorized under CNMI P.L. 10-84 and a receipt is sent to the Service documenting the deposit), the Service will notify the USAF indicating that the credit purchase obligation has been fulfilled and on-site project activities may begin as outlined within the project description above and the remainder of the conservation measures listed below.

Invasive Species Interdiction and Control

The USAF will be responsible for oversight of avoidance, minimization, and mitigation implementation by the construction contractors for projects associated with the proposed Divert activities. In addition, the USAF will be responsible for oversight of training, review, and guidance on Hazard Analysis and Critical Control Point (HACCP) plan development, implementation and revision during the construction phase of the project. The HACCP plans will incorporate measures to ensure invasive species, including the brown treesnake, are not transported to the CNMI from Guam via project vehicles, materials and equipment. The USAF

will be responsible for assuring that any HACCP plans are implemented by construction contractors to prevent the inadvertent movement of non-native, invasive species from other locations to the project site. The USAF will coordinate development of HACCP plans with the Service, including, but not limited to, annual meetings and reports to ensure the actions to eliminate or reduce risk are sufficient and on-going during construction activities.

Brown Treesnake Interdiction and Control

- I. Per Public Law 110-417, [Division A], title III, Section 316, October 14, 2008, 122 Statute 4410 and per DoD Defense Transportation Regulations, Chapter 505 protocols, the USAF, with support from Joint Region Marianas (JRM), commits to implementing 100 percent inspection of all outgoing cargo and aircraft that are leaving from Guam associated with the Divert project. Inspections will be performed with trained quarantine officers and dog detection teams, which could be supplemented by other pest control expertise (with appropriate U.S. Department of Agriculture-Wildlife Services (USDA-WS) brown treesnake detection training and oversight) to meet 100 percent inspection goals for training activities, as required by Joint Region Marianas Instruction 5090.4. As a stakeholder, the Service will have input on the USAF protocols for implementing brown treesnake interdiction and control strategies. The USAF will work cooperatively with JRM, the Service, and USDA-WS to seek information in development of protocols for implementation of interdiction and control methods aimed at controlling brown treesnake as related to Divert training activities. On an as needed basis, the Service, USDA-WS, and USAF may request meetings to discuss interdiction and control method protocols as related to Divert military exercises.
 - a. In the event military units, vehicles, and equipment accidentally leave Guam without inspection, as soon as possible, the USAF will notify: (1) USDA-WS and (2) the point of destination port or airport authorities and work with the destination port to resolve the issue. Urgency of notification is a priority so that rapid response or other actions can be implemented to reduce risk.
 - b. In addition, the USAF will route inbound personnel and cargo for tactical approach exercises or humanitarian operations (that require an uninterrupted flow of events) directly to CNMI training locations to avoid Guam seaports and airfields. If Guam cannot be avoided, the USAF, in cooperation with USDA-WS and the Service, shall identify, and USAF will implement appropriate interdiction methods that may include redundant inspections (see 1c) or other interdiction methods as agreed to by the Service, USDA-WS, USAF and JRM. Additionally, tactical approach exercises will involve only cargo equipment that has not originated from areas containing a brown treesnake population or will be 100 percent inspected by certified brown treesnake canine programs. If the USDA-WS develops performance standards for this activity, the USAF will adopt those standards, provided they are compatible with military mission.
 - c. The USAF is committed to implementing 100% redundant inspections after discussions with appropriate stakeholders. Redundant inspections include inspections on Guam and at the receiving jurisdiction for administrative and logistical movements that do not require a tactical approach to complete the training requirements. It is anticipated that

redundant inspections to the extent possible would utilize existing quarantine and inspection protocols at receiving ports, but in the event that there is inadequate inspection coverage the USAF will coordinate with the USDA-WS to provide additional canine inspection teams that will augment quarantine and inspection protocols at the receiving ports. Appropriate stakeholders include, but are not limited to: the Service to ensure the inspections are adequate to reduce risks to trust resources, USDA-WS, receiving jurisdictions and their supporting agencies with expertise in invasive species control, and other inspection authorities as needed to ensure inspection methods are current and revised as new techniques, technology, or data become available.

2. The USAF will also establish snake-free quarantine areas (barriers) for cargo traveling from Guam to CNMI and other brown treesnake-free areas. These barriers will be subject to: (1) multiple day and night searches with appropriately trained interdiction canine teams that meet performance standards under 1b; (2) snake trapping; and (3) visual inspection for snakes. In lieu of permanent barriers, temporary barriers may be preferable to permanent enclosures because of the variable sizes needed to handle different cargo amounts for the various training activities. The USAF will produce standard operating procedures for temporary barrier construction and use within two years of the issuance of this Biological Opinion. Standard operating procedures will ensure that temporary barriers will be constructed and maintained in a manner that assures the efficacy of the barrier and that staff maintaining and constructing the temporary barriers will receive training related to this activity prior to construction. The construction and maintenance of temporary barriers utilized for cargo traveling from Guam to CNMI and other brown treesnake-free areas must be approved by the Service prior to use. During the construction phase of this project, the existing permanent snake-free quarantine area at the Saipan seaport should be utilized for surface cargo following relevant CNMI and DoD regulations. Standard operating procedures will be developed in cooperation with the Service, U.S. Geological Survey, Fort Collins Science Center, Invasive Species Science Branch, and the USDA-WS to ensure risk to trust resources is adequately minimized. If risks are not adequately minimized, additional recommendations will be provided for incorporation into the protocols until the USAF and Service mutually agree the risk has been minimized. The Service, USAF, and other appropriate parties will meet, if necessary, to resolve concerns such that the protocols ensure risk is adequately minimized.
3. The USAF, in conjunction with the Service and JRM, will develop procedures and protocols specific to Divert training events that will support a rapid response action in the event of a brown treesnake sighting resulting from Divert activities. Divert activities and exercises will be varied in the number of aircraft and personnel, and each event will have differing logistics support capabilities depending on the nature of the event. The type and amount of logistic support will be agreed to prior to each major event. Logistic support will include consideration of both in-kind assistance through air transport, shared billeting, security detail, food, materials, and ground transportation, and financial compensation for agreed-to response actions that could not be supported by in-kind assistance, including compensation for performance of services to support the deployment and execution of rapid response search teams.

4. The USAF, working in collaboration with the Service, and USDA-WS, will decide how best to implement the Brown Treesnake Control Plan (BTS TWG 2009, 37 pp.) relevant to Divert activities. The USAF and Service must mutually agree on the Brown Treesnake Control Plan implementation.
5. The USAF will provide invasive species awareness training for all military and contractor personnel prior to all training activities. This would include a mandatory viewing of a brown treesnake educational video, distribution of pocket guides with brown treesnake information and personal inspection guidelines to be carried at all times, and assurance that brown treesnake awareness extends from the chain of command to the individual military service member
6. Due to limited availability of inspectors, trained dogs, and quarantine facilities and equipment on Guam and the CNMI, the USAF will coordinate closely with the Service, U.S. Department of Agriculture, CNMI Department of Land and Natural Resources, and Joint Region Marianas staff responsible for managing their brown treesnake program, on planning for training activities on Saipan. The USAF, along with cooperating agencies, will identify the inspection and interdiction requirements for the Divert training, including the number of trained quarantine officers and dog detection teams required. The USAF will coordinate and consult with the Service on the inspection and interdiction requirements identified by the USAF, and the Service must concur with these requirements prior to the implementation of the exercise or training activity. The USAF, along with the cooperating agencies, will develop plans to ensure that inspection personnel are available and that all requirements can be met, and will identify the support that the USAF will need to provide for the inspections. Planning for training exercises generally begins months prior to implementation of an exercise, and planning for complex training that would require a substantial number of inspectors, quarantine areas, or other personnel or equipment for control and interdiction generally begins more than a year in advance. If adequate resources, such as trained inspectors and dog teams, are not available during training activities, training will not occur until resources are available.

Prevention of Invasive Species Introductions and Spread

1. All personnel involved in Divert training will adhere to DoD Instruction 5090.10A and the 2005 Brown Treesnake Control and Interdiction Plan, which calls for individual troops to conduct self-inspections to avoid potential transport of brown treesnakes. Troops will inspect all personal gear and clothing (e.g., boots, bags, weapons, pants), hand-carried equipment and supplies and tent canvas. The intent of this measure is to minimize the potential risks and subsequent effects associated with transport of troops and personnel from Guam to the CNMI and other areas that do not have brown treesnakes.
2. In addition to self-inspections, each training action will undergo a pathway risk analysis as a tool to improve programmatic efficiency while preventing the spread and introduction of invasive species. Actions at risk of transporting invasive species will have prevention tasks identified and implemented to reduce risk. Methods employed such as HACCP planning

development and implementation by the USAF may be utilized to conduct pathway analysis. Pathway risk analysis must be completed prior to each training action being implemented.

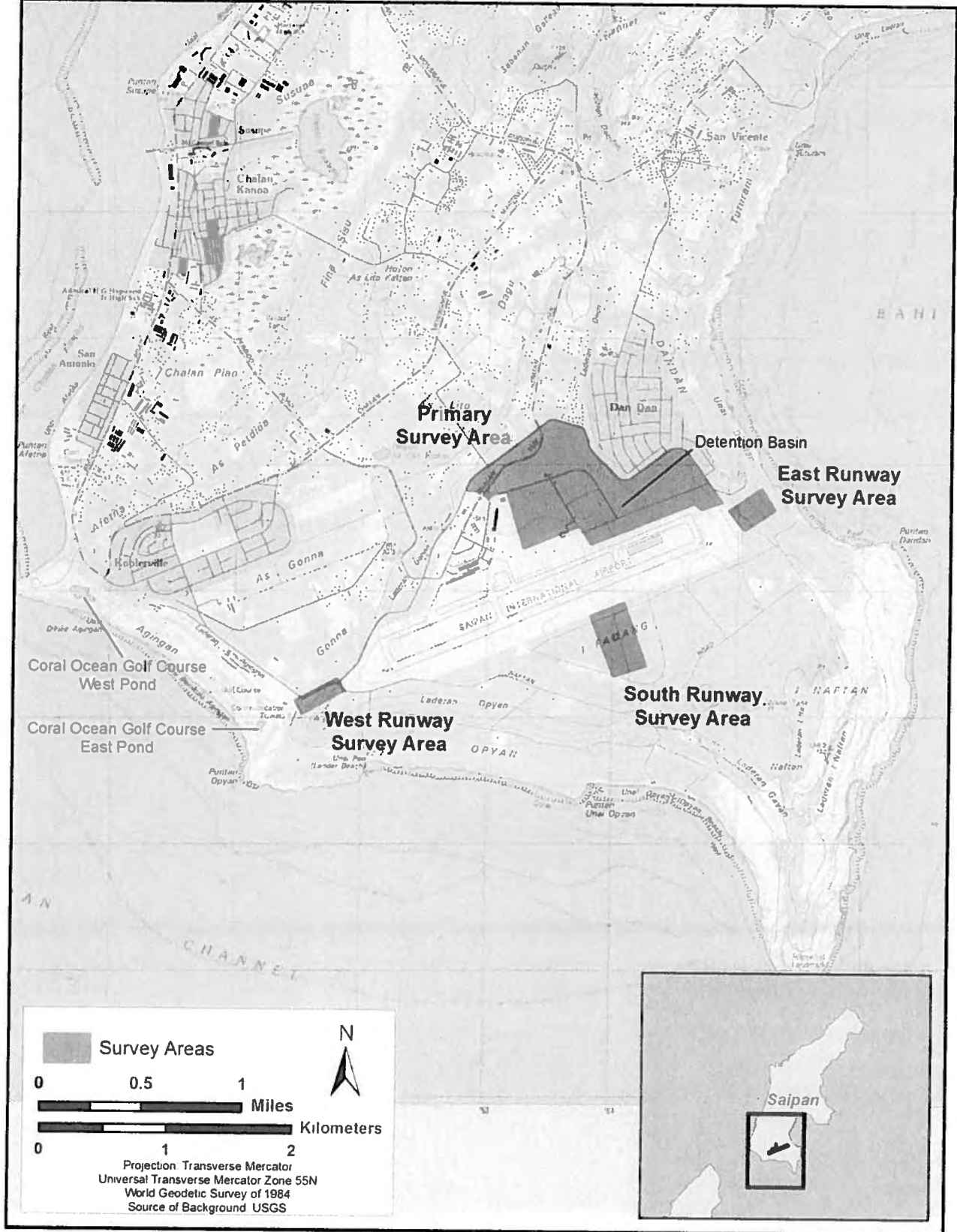
3. The USAF is a participating agency in the development of the Micronesia Biosecurity Plan. The Micronesia Biosecurity Plan is intended to coordinate and integrate inter-agency invasive species management efforts such as control, interdiction, eradication, and research. Once completed, any portions of the Micronesia Biosecurity Plan determined to be applicable to Divert construction and training activities, will be implemented when such procedures do not unduly interfere with military training. The USAF will continue to work cooperatively with the Service and U.S. Department of Agriculture in development of protocols for implementation of interdiction and control methods in accordance with recommendations contained in the Micronesia Biosecurity Plan identified as being tied to USAF actions.

STATUS AND ENVIRONMENTAL BASELINE OF THE SPECIES

A complete Status of the Species for the nightingale reed-warbler can be found in the October 23, 2008, *Programmatic Biological Opinion Regarding the Reestablishment, Management, and Use of the Saipan Upland Mitigation Bank, Saipan* (2008-F-0033). The nightingale reed-warbler was federally listed as an endangered species in 1970 (Service 1970, p. 18321). No critical habitat has been designated for this species. The main threats currently facing the nightingale reed-warbler are: (1) habitat loss and degradation (*e.g.*, wetland destruction, upland forest conversion, habitat destruction by feral ungulates, and habitat degradation by non-native invasive plant species); (2) potential for the establishment of the brown treesnake on Saipan; and, (3) predation by introduced animals such as rats (*Rattus* spp.), cats (*Felis catus*), and possibly monitor lizards (*Varanus indicus*). Island-wide surveys for the nightingale reed-warbler were completed on Saipan in 1982, 1997, and 2007 (Engbring et al. 1986, USFWS 1998a, Camp et al. 2009). These data indicate nightingale reed-warbler populations on Saipan declined by approximately 61 percent from 1982 to 2007. While we do not have updated population information for the last 5 years, we assume that the population has continued to decline as threats to the species have not changed. Habitat loss through development has continued and predator control has not been implemented. However, most habitat loss has been permitted through use of the Saipan Upland Mitigation Bank which will have a long-term benefit to the species. The population of nightingale reed-warblers in the Saipan Upland Mitigation Bank Conservation Area has not been surveyed since 2008. From 1999 to 2008 the population fluctuated yearly but tended to remain stable over the 10-year period (CNMI DFW, unpublished data, 2013).

Environmental Baseline

Micronesian Environmental Surveyors, a contractor for the USAF, conducted avian surveys around GSN in February and March of 2012. Surveys were conducted on the northeast side of the airport where most facilities would be constructed and an area south of the runway slated for the munitions storage facility (Figure 4). Eight nightingale reed-warbler territories were defined in the northeast survey area (see Figure 3). No nightingale reed-warblers were detected south of the runway.

Figure 4. Nightingale reed-warbler survey areas

Additional nightingale reed-warbler territories are likely present in areas surrounding the airport that were not surveyed as part of the proposed project. These territories would not be subjected to construction disturbance, but are within areas that will have increased noise due to additional overflights. There is potential nightingale reed-warbler habitat in As Gonno to the northwest of the airport, east and west of the runway, and south of the runway near Obyan. Comprehensive nightingale reed-warbler surveys were not conducted in these areas, but roadside point-counts were conducted three times at east and west ends of the runway. A nightingale reed-warbler was heard at the west end of the runway, and potential habitat was observed at both ends. In addition, surveys conducted in 2007 by the Service and CNMI DFW detected two nightingale reed-warblers near the west end of the runway, confirming that there are reed-warblers in the area. It is assumed, therefore, that nightingale reed-warbler territories are present at both ends of the runway.

Using vegetation mapping, existing CNMI DFW and USFWS unpublished survey data, and information from Camp et al. (2009), we have estimated the potential number of nightingale reed-warbler territories in the non-surveyed areas around the airport. The two areas that will have the loudest noise from Divert training are the east and west ends of the runways (see Figure 4).

We estimate there are potentially four nightingale reed-warbler territories at the east and west ends of the runway. Nightingale reed-warblers are also present in habitats to the north and south of the airport. We estimate that there are potentially thirteen nightingale reed-warbler territories within approximately 500 meters north and south of the runways that may experience noise disturbance from Divert training activities.

The most recent data indicates there are approximately 229 nightingale reed-warblers in the Saipan Upland Mitigation Bank Conservation Area (CNMI DFW unpublished data 2008). There are no nightingale reed-warblers located at or adjacent to the seaport site (see Figure 2).

EFFECTS OF THE ACTION

Construction

Evaluation under the SUMB Programmatic Biological Opinion

The proposed project will clear 2.6 hectares of nightingale reed-warbler habitat for construction of the east parking apron. Project activities will include clearing vegetation and use of heavy equipment. Project impacts are assessed by determining the number of territories directly and indirectly affected by the action. Due to vegetation clearing for construction of the east apron, one nightingale reed-warbler territory will be subject to direct impacts including habitat loss, fragmentation and degradation. Indirect impacts to this territory and potential adjacent territories include increased noise during clearing and increased risk of non-native invasive species. Under the SUMB Programmatic Biological Opinion, project impacts are assessed by determining the number of territories directly and indirectly affected by the action. For habitat clearing for the east apron, impacts to nightingale reed-warblers will be minimized by purchasing one credit in the Saipan Upland Mitigation Bank commensurate with the direct and indirect impacts associated with the project, and by implementing conservation measures.

Implementation

The implementation of Divert will cause an increase in noise levels around GSN and in surrounding nightingale reed-warbler habitats. The effects analysis for implementation of Divert will therefore focus on potential noise impacts to nightingale reed-warblers from the increase in flights at GSN. This section will first review existing knowledge and literature regarding the impacts of noise on avian species, with an emphasis on military noise and its impacts on songbirds. The noise review is followed by an overview of potential impacts to nightingale reed-warblers from Divert, and then an assessment of the level of take that is expected from Divert.

Noise review

Studies on the impacts of aircraft overflights to wildlife have been primarily limited to work on ungulates (e.g., Krausman et al. 1998; Maier et al. 1998; Frid 2003; Landon et al. 2003; Krausman et al. 2004; Lawler et al. 2005), birds of prey (e.g., Andersen et al. 1989; Watson 1993; Trimper et al. 1998; Delaney et al. 1999; Palmer et al. 2003), and waterbirds (e.g. Ward et al. 1999; Conomy et al. 1998 a,b; Komenda-Zehnder et al. 2003). These studies report a wide range of reactions to overflights depending on the biology of the species, its previous exposure to overflights, whether the species is breeding, the type of aircraft, the altitude of the aircraft, and the lateral distance between aircraft and the species. The variability in these reactions and their specific circumstances make it difficult to be certain how a particular species, such as the nightingale reed-warbler, will react to aircraft overflights.

Avian behavioral responses to noise may range from flushing and body shifting to physiological responses such as an increase in heart rate or hormone balance (Brown 2000, p. 11; Barber et al. 2010, p. 181). Specific reactions will vary by species and by an individual's previous exposure to noise disturbance (Manci 1998, p. 15). Individuals with previous exposure to aircraft overflights may display less reaction to overflights than individuals without previous exposure (Andersen et al. 1989, Conomy et al. 1998b). This reduced reaction is believed to be a sign of habituation; however, the habituation may be individual or species specific. For example, Conomy et al. (1998b) found that black ducks (*Anas rubripes*) did not become habituated to noise. Larkin (1996, p. 1) in a review of noise impacts on wildlife, reported that decreased responsiveness from wildlife after repeated noise is frequently observed and attributed to habituation. However, the degree of disturbance to which a species can habituate may be limited (National Park Service 1994, p. 5.17). Francis et al. (2011a, pp. 6-7) state that overall most species, even urban-adapted species, respond negatively to noise.

Whether a bird moves away from a site of disturbance or stays on site will be dependent on the quality of the current site, the distance to other suitable sites, the relative risk of predation or density of competitors at different sites, and the investment an individual has made to a site (i.e. establishing a territory) (Gill et al. 2001, p. 266). A bird with suitable habitat nearby may avoid disturbance because it has alternative sites to go to, but a bird with no suitable habitat nearby will be forced to remain onsite despite the disturbance, regardless of whether or not this will affect survival or reproductive success (Gill et al. 2001, p. 266). The cost of moving to a new site for a territorial species could be high (Gill et al. 2001, p. 266).

Habitat Degradation

There are multiple ways for anthropogenic noise to cause habitat degradation including noise pollution, masking of avian acoustic signals, changes in predation risk, and reduction in reproductive success. Noise pollution is defined as undesirable human noise, and has increased in most environments over the last century (Ortega 2012, p. 7). Noise pollution can affect birds in numerous ways including physical damage to ears; stress, fright and avoidance responses; changes in reproductive success and in vocal communication; and interference with ability to hear predators and other sounds (Ortega 2012, p. 8). Anthropogenic noise could be a factor driving bird species out of urban areas, even when other habitat requirements are still sufficient (Slabbekoorn and Ripmeester 2007, p. 73).

Most studies on habitat degradation from noise have focused on highway and gas drilling compressor pads, and these studies demonstrate that habitat near a noise source is less suitable than habitat farther away. Francis et al. 2011b (p. 1269 and 1278) found that compressor noise at gas wells caused a five percent lower occupancy of avian species near the pads. Bayne et al. 2008 (p. 1190) found that passerine density was significantly influenced by chronic anthropogenic noise from gas compressors, and that noise levels from compressor stations affected birds up to 700 meters into the surrounding forest. Ovenbirds (*Seiurus aurocapilla*) were found to have lower pairing success near compressor pad sites compared with noiseless well pads (Habib et al. 2007, p. 176). Foppen and Deuzeman (2007; reported in Slabbekoorn and Ripmeester 2007, p. 9) found that great reed warblers (*Acrocephalus arundinaceus*) had higher densities of territories in a wetland near a busy road during two years when the road was closed, compared to years both before and after the road closure. Kuitunen et al. 1998 (p. 297) found that land bird density was lower closer to highways, but this was not the case for the only *Acrocephalus* species in the study area, *Acrocephalus schoenobaenus* (p. 299). The willow warbler (*Phylloscopus trochilus*) had a much lower density of territorial males within 0-200 meters from a highway compared to habitat farther away, yearling males were found 50 percent more often in the road zone, and the study indicated that the road zone probably serves as a sink for young males due to reduced habitat quality from noise (Foppen and Reijnen 1994, p. 99). These studies generally show that noise pollution can cause habitat degradation.

Masking

Anthropogenic noise that drowns out vocal communication between birds is called masking. Masking can have serious consequences because birds communicate vocally to attract mates and defend territories (Ortega 2012, p. 10; Slabbekoorn and Ripmeester 2007, p. 1; Barber et al. 2010, p. 180). Masking of communication necessary for territory defense and mate attraction may have a negative impact on reproductive success and exclude birds from otherwise suitable habitat (Halfwerk et al. 2011, p. 210). Halfwerk et al. (2011, pp. 217-218) suggest four mechanisms related to masking that could reduce avian reproductive success: (1) female birds interpret male songs masked by high noise as of lower quality and put less energy into the breeding cycle; (2) a noisy territory may be perceived of as being a lower quality and avoided, reducing the number of available territories for breeding; (3) increased noise levels cause physiological stress due to reduced foraging opportunities if prey are less easy to detect or because the bird has to spend more time scanning for predators; and, (4) noise could have a negative impact on parent-offspring communication.

Anthropogenic noise is typically loud and low in pitch (Slabbekoorn and Ripmeester 2007, p. 1). Birds with low-frequency signals are more likely to abandon noisy areas (Francis et al. 2011a, p. 7), including noisy roads (Slabbekoorn and Ripmeester 2007, p. 1), and birds inhabiting noisy areas may sing at a higher frequency to reduce masking by noise (Francis et al. 2011a, p. 6; Barber et al. 2010, pp. 185-186; Slabbekoorn and Ripmeester 2007, p. 3). How well a species can survive in urban and other noisy environments may depend on how well they can adjust the frequency of their vocal communication (Slabbekoorn and Ripmeester 2007, p. 3). *Luscinia megarhynchos*, an urban nightingale in Berlin, was found to sing at higher sound levels in noisy locations and raised their song volumes in response to traffic noise by singing louder on weekday mornings than weekends (Brumm 2004, pp. 434-435). Slabbekoorn and Peet (2003, p. 267) found that urban great tits (*Parus major*) at noisy locations sang with a higher frequency. Males singing at higher vocal amplitudes may be at a disadvantage due to increased energetic costs of singing loudly (Brumm 2004, p. 439). Noise pollution can also inhibit a bird's ability to detect predators (Habib et al. 2007, p. 181; Ortega 2012, pp. 13-14) or drown out alarm calls warning of approaching predators (Barber et al. 2010, p. 182 and 184).

The Service does not have data on the frequency of the nightingale reed-warbler song (Marshall 2012, pers. com.). Few songbird species rely just on low frequencies but one species that does is the great reed-warbler, and other nightingale species are known to use a wide range of frequencies, including very low ones (Slabbekoorn and Ripmeester 2007, p. 9).

Breeding

Anthropogenic noise can have negative effects on avian breeding (Halfwerk et al. 2011, p. 210; Slabbekoorn and Ripmeester 2007, p. 2; Ortega 2012, p. 10). Noise may affect egg production, incubation, brooding and nest abandonment (Ortega 2012, p. 10). Halfwerk et al. (2011, p. 210) found that females laid smaller clutches in noisier areas, and that noise recorded in April had a negative effect on the number of great tit fledglings independent of clutch size, compared to noise in March. High noise levels could lead females to breed later, allocate less energy to care of eggs and chicks, and cause communication difficulties between parents and offspring (Halfwerk et al. 2011, pp. 217-218).

Habib et al. (2007, p. 176) found that ovenbird pairing success was reduced, and more inexperienced birds were breeding for the first time, near noisy compressor sites compared to noiseless sites. This reduction in ovenbird pairing success near compressor sites was likely caused by noise interfering with a male's song, thereby inhibiting communication with females and reducing pair success (Habib et al. 2007, p. 176). Foppen and Reijnen (1994, p. 95) found that the zones nearest to a highway served as a sink for male willow warblers, and that the proportion of successful yearling males was 50 percent lower in the road zones compared to zones farther away from the highway.

There may be differences between the effects of chronic noise and intermittent loud noise in the responses of breeding birds. Birds that select nest sites with chronic noise may "accept" the noisy conditions and not abandon nests in response to the noise. However, birds that select nest sites during quiet times, and then become disturbed by noisy conditions later, may abandon nests (Ortega 2012, p. 10).

In a study of the effects of helicopter noise from the Marine Corps Air Station Miramar (MCAS) on California gnatcatcher (*Poliophtila californica californica*) reproduction, Hunsaker and Rice (2006, p. 101) found that noise levels at MCAS did not affect reproductive success. California gnatcatchers found and inhabited suitable nesting sites in spite of the noise environment, and the factors affecting nest success were habitat, topography, and rainfall. Awbrey and Hunsaker (1997, p. 3177) found that fixed-wing aircraft noise at Naval Air Station Miramar was correlated with fewer California gnatcatcher nest attempts and eggs laid, but that once a nest was established with eggs in it, military aircraft noise had no detectable influence on reproductive success. In Hawaii, Vanderwerf (2000, p. 9) studied the response of Oahu elepaio (*Chasiempis sandwichensis ibidis*) at eight nests to military noise (artillery blasts ranging from 89-116 dB). No elepaio flushed from a nest in response to artillery noise. A mild response was only observed twice by the same incubating male who raised his head and scanned the area after an artillery blast then resumed preening after 1-2 seconds (Vanderwerf 2000, p. 38). Delaney et al. (2002, p. 54) found that the nesting success of red-cockaded woodpeckers (*Picoides borealis*) near Fort Stewart, Georgia, was not significantly affected by experimental and passive military training noise. However, red-cockaded woodpeckers did flush from their nests repeatedly due to nearby (less than 100 meters) artillery and blank fire events, but returned to their nests quickly and without impact to nesting success (Delaney et al. 2002, p. 59). The effects of aircraft noise on Oahu elepaio or red-cockaded woodpeckers were not tested in either study.

Birds may also suffer physical damage to their ears from loud noise (Barber et al. 2010, p. 181). Damage can occur from single blasts (>140 dBA), multiple blasts (>125 dBA) or continuous exposure to noise at greater than 110 dBA (Ortega 2012, p. 9; Dooling and Popper 2007, p. 23). Birds are able to regenerate the sensory cells of the inner ear providing a way for them to recover from physical damage to the ear from loud noise, and so do not suffer permanent hearing loss like mammals (Dooling and Popper 2007, p. 5 and p. 25). However, in their review, Dooling and Popper (2007, p. 27) state that the effects of short, intermittent, and high intensity sounds on avian hearing are much less known than that from highway noise.

Effects of Aircraft Overflight Noise on Nightingale Reed-Warblers

Upon implementation of Divert, military training flights would occur up to eight weeks a year at GSN. Exact training exercises are not defined at this time. Humanitarian operations occurring outside the eight week training time may also occur but are not expected to significantly disturb nightingale reed-warblers above current baseline conditions at the airport. The focus of this section will be the effects of increased noise from aircraft overflights on nightingale reed-warblers from eight weeks of joint military exercises at GSN.

The noise disturbance from the training will be short-term, high-intensity, repeated single pulse, and intermittent. In the areas closest to the runway the average daily noise (DNL), as presented in the medium scenario in the DEIS (USAF 2012), would increase approximately 20 to 25 dBA over baseline conditions, with average daily sound levels not rising above 83 dBA. However, the maximum noise from each individual aircraft overflight will increase from baseline conditions between 10 to 29 dBA for F-22 (or similar fighter jet) training flights, depending on proximity to the airport runways (Table 1, Figure 5). The loudest noise would occur at the east and west ends of the runway where noise from F-22 training flights could reach 118 dBA for each take-off or landing. The maximum number of F-22 flights per day would be 48, and the

noise event would last less than 60 seconds, with the maximum sound level occurring only briefly. Flights from KC-135, and similar aircraft, will also occur; however noise from these flights does not rise above current conditions and therefore no adverse effect is expected from operation of these planes.



Table 1. Noise levels (in dBA) from current aircraft operations and proposed military operations for ten points surrounding GSN in occupied or potential nightingale reed-warbler (NIRW) habitat.

	Current	Proposed Military		
Location	767	KC-135	F-16	F-22
East end of runway	89.4	95.2	115.9	118.1
West end of runway; east golf course pond	92.6	97.3	115.8	117.7
Occupied NIRW territory north of runways	85.4	79.1	105.7	108.7
As Gonno farm area; occupied NIRW territories	84.1	81.2	99.1	108.7
Obyan area south of runways	85.2	76.5	103.5	106.4
Obyan area south of runways	83.8	78.0	104.8	106.5
Occupied NIRW territory north of runways	76.5	64.7	85.7	94.5
Koblerville; occupied NIRW territories	73.3	60.0	83.3	93.0
Occupied NIRW territory north of runways	76.4	55.7	78.8	86.3
Koblerville; occupied NIRW territories	68.3	45.4	73.1	82.2

The nightingale reed-warblers that have territories surrounding GSN may be habituated to current airport noise levels, along with noise from vehicular traffic and rural residential areas. The most frequent aircraft flying currently out of GSN is the Piper Cherokee (a single-engine aircraft) with 113 daily flights, followed by the Cessna 441 (13 daily flights), the 747-200 (6 flights), and the 767-300 (6 flights) (USAF 2012, p. 3-4). The 767 is the loudest aircraft currently operating out of GSN, and is similar in noise level to the 747. Noise from 767 and 747 takeoffs and landings range from approximately 75 dBA to 93 dBA 12 times a day in areas surrounding GSN (see Table 1).

Male nightingale reed-warblers have high site-fidelity to their established territories, remaining in the same location for multiple years (Craig 1992; Mosher 2006; Johnson 2003). It is not known what levels of disturbance or habitat degradation would cause a male reed-warbler to abandon an established territory. However, as described above, some birds may be forced to stay in habitat made unsuitable by noise disturbance because suitable habitat is limited elsewhere. The nightingale reed-warbler is a strongly territorial species (Mosher 2006, USFWS 1998b) and could appear habituated to airport noise but actually be maintaining territories in the area due to habitat limitations not habituation, and may suffer fitness costs due to this. Habitat loss is considered one of the primary threats to the nightingale reed-warbler (USFWS 1998b), and this, combined with territoriality, may mean that some pairs are forced into lower-quality habitat. There are no studies comparing reproductive success of reed-warblers in undisturbed versus disturbed habitats, so it is unknown if the birds near GSN suffer fitness costs because of the noise disturbance in the area.

Nightingale reed-warblers have been observed to be tolerant of noise disturbance (Rounds pers. com. 2012). They have been observed in urban areas of Garapan, on the edges of residences, farms, and industrial areas where use of heavy equipment and construction occurs, and successfully nested with heavy equipment operating 75 meters away at a quarry site (Rounds pers. com. 2012; Gourley and Johnson 2002). While there have been no comprehensive studies of reed-warbler response to noise, it does appear that the species is tolerant to some levels of noise disturbance.

For eight weeks a year, both the noise level and frequency of aircraft flights will increase under Divert. During the non-breeding season, nightingale reed-warblers could be disturbed by military training flights while foraging or roosting. In these cases responses may include startling, fight-or-flight responses, and/or flushing. Since the noise is of short-duration, it is not expected that these responses would significantly disrupt foraging or roosting and most likely the birds will quickly return to what they were doing. Nightingale reed-warbler communication may be disrupted in the short-term if aircraft noise exceeds reed-warbler song frequency.

Eight weeks of military training during the nightingale reed-warbler breeding season could have adverse effects on breeding success for pairs with territories near the airport. The adverse effects are most likely to occur during the territory formation, nest building, egg-laying, and early incubation stages (see Awbrey and Hunsaker 1997). If military training occurred during these early stages it is possible that a pair could abandon a territory or a nest due to the new noise disturbance (Ortega 2012, p. 10). What seemed high-quality suitable habitat without the noise disturbance may degrade to unsuitable habitat after military training begins.

Incubating or brooding birds may flush off nests as with red-cockaded woodpeckers (Delaney et al. 2002, p. 55) or may stay on the nest similar to the Oahu elepaio (Vanderwerf 2000, p. 38). Because no studies have monitored reed-warbler nests during disturbance events, it is unknown how incubating or brooding nightingale reed-warblers will react to F-22s or other fighter jets flying overhead. Once a nest is established it is less likely that the pair will abandon the nest or the territory and the noise disturbance at this point is less likely to reduce reproductive success. Begging calls from nestlings or juveniles could be temporarily masked by the loud noise but because the noise is of short-duration it is unlikely to affect provisioning rates.

The noise pollution from the military training could lead to overall habitat degradation around the airport. It is possible that during training events birds could abandon territories and look for new less-disturbed habitats for breeding. Once the training session is over the habitat will become quiet again, and the same pairs, or new ones, could move back in. In a worst-case scenario a cycle could be repeated of birds abandoning and reestablishing territories and the area could become a sink for nightingale reed-warbler breeding (see Halfwerk et al. 2011, Ortega 2012, Habib et al. 2007).

Predation is a primary cause of nightingale reed-warbler nest failure (Mosher 2006; USFWS 1998b). Feral cats or rats stalking a nightingale reed-warbler are likely to prey on the birds regardless of noise. Predation from Micronesian starlings (*Aplonis opaca*) or collared kingfishers (*Todiramphus chloris*) on nightingale reed-warbler nests is possible, though not documented in the literature (Mosher 2006, p. 60). If noise disturbance causes a nightingale reed-warbler to flush from incubating or brooding at a nest it is possible an avian predator more tolerant of noise could take advantage of the absence and prey upon the nest, but again, a cat or rat is likely to predate regardless of the noise. Overall, it is not expected that noise from Divert training will cause an increase in nightingale reed-warbler predation because the noise disturbance will be intermittent and short in duration.

As described above, hearing damage from single, repeated loud noises typically occurs at noise levels greater than 125 dBA. Noise from the Divert training is not expected to rise above 120

dBA in nightingale reed-warbler habitat. Therefore, we do not expect hearing damage from the proposed training activities.

Take assessment

Guidance on potential effects of noise on endangered wildlife and when disturbance rises to the level of take was taken from USFWS (2006), Pater et al. (2009), and Dooling and Popper (2007). While nightingale reed-warblers may be disturbed by many human activities, we anticipate that such disturbance rises to the level of harassment under a limited range of conditions. For the Divert project, we are assuming that harassment may occur when nightingale reed-warblers demonstrate behavior suggesting that the safety or survival of the individual is at significant risk, or that a reproductive effort is potentially lost or compromised. Examples of this behavior include, but are not limited to:

- An adult is repeatedly flushed from a nest during the incubation, brooding, or fledging period, that potentially results in egg failure or reduced juvenile survival.
- An adult is repeatedly flushed from a nest resulting in increased energetic costs.
- An adult or juvenile abandons a territory.

The amount of incidental take of the nightingale reed-warbler that will occur is difficult to quantify because the effects of noise on nightingale reed-warblers is not well studied, and it is unknown how frequently joint military exercises will occur during the nightingale reed-warbler breeding season. For this Biological Opinion, we quantified take using the best available data on effects of noise on songbirds (described above), our knowledge of nightingale reed-warbler behavior, and best estimates of joint military exercises training schedules provided by the USAF.

We estimate that there are potentially four nightingale reed-warbler territories at the west and east ends of the runway where the loudest noise will occur. These territories will be subject to noise levels up to 118 dBA from F-22, or similar fighter jets, overflights. The maximum number of F-22 (or similar fighter jet) flights per day would be 48 and the best estimate of a training event is two weeks. This level of training and noise disturbance could cause nightingale reed-warblers to abandon territories or nests, especially if the training occurred immediately prior to or at the beginning of a nesting attempt. Birds may also have startle responses and/or flush from nests. Nightingale reed-warblers may suffer increased energetic costs due to repeated loud noises and flushing. The increased energetic costs could adversely affect reed-warblers by decreasing the energy available to them for foraging and reproduction. The noise levels in these areas could cause these four territories to become unsuitable habitat for reed-warblers, though they may still occupy the area, and breed successfully, during quiet times.

Adults displaced by habitat degradation will attempt to establish new territories in areas that may already be occupied by other nightingale reed-warblers. Since the nightingale reed-warbler is territorial, neighboring pairs are likely to aggressively confront the displaced adults. A frequently observed pattern of intra-specific passerine bird territorial behavior is that the bird defending its territory is more aggressive than an intruder and is usually successful at driving the intruder away (Van Tyne and Berger 1976). The confrontation could disrupt the neighboring pairs' normal nesting behavior patterns by taking adults away from nests during the breeding season to defend their territories. However, this disruption is unlikely to rise to the level of take.

Nightingale reed-warblers are also present in habitats to the north and south of the airport runways in areas that will experience periodic noise up to 110 dBA from military training events. These areas, within approximately 500 meters of the runways, may support up to 13 nightingale reed-warbler pairs (based on survey data for Divert and habitat estimations). In our opinion it is less likely that birds will abandon territories in these areas, but birds could flush from nests if they are startled, especially during early training events before they are habituated to the noise. The noise disturbance will increase to over 20 dBA greater than ambient nesting conditions in these areas, and that has been used by the Service as a threshold for disturbance reaching the level of take (USFWS 2006). However, the birds in these areas currently experience daily noise, from take-offs and landings of commercial aircraft, that reaches up to 90 dBA. We feel that the noise disturbance may cause increased energetic costs for nightingale reed-warblers flushed from nests due to joint military exercise; however, we do not expect this disturbance to result in reduced reproductive success. Therefore, we expect a low level of take of nightingale reed-warblers, in the form of harassment and increased energetic costs from flushing, in the 13 territories that will experience increased noise (but below 110 dBA) from joint military exercises.

Evaluation under SUMB Programmatic Biological Opinion

Due to noise disturbance from implementation of Divert military exercises, four nightingale reed warbler territories will be subject to direct impacts including habitat loss and degradation and thirteen nightingale reed-warbler territories will be subject to direct impacts of habitat degradation. Under the SUMB Programmatic Biological Opinion project impacts are assessed by determining the number of territories directly and indirectly affected by the action. For noise disturbance, ESA responsibilities will be addressed by the purchase of 17 credits and by implementing associated conservation measures.

Biosecurity

To reduce the risk of introduction and spread of non-native, invasive species via Divert activities, the USAF has proposed to implement a variety of conservation measures throughout the action area. Effective interdiction of brown treesnakes on Guam and the CNMI is critical to preventing the spread of this species. The USAF has committed to snake inspection (100% as a goal), construction of snake barriers and brown treesnake rapid response to support military training. In addition, the USAF has committed to the establishment of a biosecurity program during construction and implementation of the proposed project. Successful implementation of the biosecurity program will prevent adverse effects to listed species, and other native wildlife, from introduction of non-native species.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future non-Federal actions that are reasonably certain to occur within the area of action subject to consultation. Future Federal actions will be subject to the consultation requirements established in section 7 of the ESA and, therefore, are not considered cumulative for the proposed action. Sustenance farming, clearing, and burning are ongoing and are likely to continue to be implemented on the island of Saipan. However, use of the SUMB to off-set impacts from authorized habitat clearing will limit adverse effects to nightingale reed-warblers from habitat loss. Unauthorized clearings are also likely to continue on Saipan, further reducing the amount and quality of nightingale reed-warbler habitat. Natural disasters, such as typhoons, also occur regularly on Saipan further damaging habitat. Persecution of nightingale reed-warblers by people resentful of ESA restrictions has also been reported, and may continue in the future.

CONCLUSION

The Service anticipates that the direct and indirect effects of the proposed action will result in take of the nightingale reed-warbler in the form of harassment from noise disturbance and harm from habitat clearing. Adverse effects of the proposed actions on nightingale reed-warblers will be minimized by avoidance and minimization measures. For the nightingale reed-warbler, the Service has determined that the proposed action conforms with the SUMB Programmatic Biological Opinion based upon the nature of the action and the incorporation of avoidance, minimization, and offsetting measures as described in that document. Additionally, the status, baseline, and potential project impacts are current and consistent with those evaluated within the SUMB Programmatic Biological Opinion. After reviewing the current status, the environmental baseline, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that implementation of the proposed action discussed herein is not likely to jeopardize the continued existence of the nightingale reed-warbler.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulations promulgated pursuant to section 4(d) of the ESA prohibit the take of endangered or threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2) of the ESA, taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the USAF so that they become binding conditions of any grant, permit, or permissions issued by the USAF, as appropriate, for the exemption in section 7(o)(2) to apply. The USAF has a continuing duty to regulate the activity covered by this incidental take statement. If the USAF (1) fails to assume and implement the terms and conditions or (2) fails to require the adherence to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit, grant document, or other permissions, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the USAF must report the progress of the action and its impact on the species as specified in the Incidental Take Statement.

AMOUNT OR EXTENT OF TAKE

Based on the proposed project description and the analysis of the effects of the proposed action provided above, the Service anticipates that construction and implementation of Divert on Saipan may cause take of the nightingale reed-warbler. The Service is tracking the loss of the nightingale reed-warbler and its habitat permitted under the SUMB Programmatic Biological Opinion, and we evaluate each project to ensure that continued implementation will not result in unacceptable effects to the listed species. The conservation measures appropriate to avoid, minimize and offset project impacts as identified in the SUMB Programmatic Biological Opinion have been included within the project description above. We estimate the following forms of incidental take will occur from construction and implementation of Divert training:

1. One nightingale reed-warbler territory will be cleared for construction of the east parking apron resulting in harm of up to two adults and up to four juveniles.
2. Four nightingale reed-warbler territories could be abandoned due to habitat degradation from repeated and loud noise from fighter jet training resulting in harassment of up to eight adults and up to sixteen eggs, chicks, or juveniles.
3. Thirteen nightingale reed-warbler territories will suffer habitat degradation from noise disturbance from fighter jet training resulting in periodic, but rare, harassment of up to twenty-six adults.

Effect of the Take

The level of Incidental Take anticipated from this project is consistent with the SUMB Programmatic Biological Opinion and will not jeopardize the survival or recovery of the nightingale reed-warbler.

Reasonable and Prudent Measures

The reasonable and prudent measures given below, with their implementing terms and conditions, are designed to minimize the impacts of incidental take that might otherwise result from the proposed actions. If, during the course of the action, the level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. In addition, the action that caused the taking must cease; the action agency must immediately provide an explanation of the causes of the taking; and must review with the Service the need for possible modification of the

reasonable and prudent measures. The following reasonable and prudent measures are necessary and appropriate to minimize the effect of take on the nightingale reed-warbler. The measures described below are non-discretionary and must be implemented.

- I. The USAF shall minimize the potential for harassment, harm, or mortality of nightingale reed-warblers.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the USAF must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

The following terms and conditions implement reasonable and prudent measure number one.

- I(a) To the extent practicable, consistent with national security and contingency requirements, and military safety and security requirements, the USAF will notify the Service on an annual basis of upcoming Divert training events at GSN including timing and description of the joint military exercises.
- I(b) The USAF will submit annual reports to the Service on the first of December of each year beginning in 2014. The purpose of the annual report is to discuss successes and failure of all avoidance, minimization, and conservation measures, and terms and conditions listed in this biological opinion in relation to the anticipated and observed impacts and incidental take. The report will include details regarding invasive species control and interdiction including which cargo/flights were inspected or non-inspected, potential level of risk associated with each cargo/flight type, and where the cargo/flights originated from for training related actions only. The reports should include explanations if specific inspections were missed and document all snake detections or other high risk incidents and the method used for the detection for training related actions only. The report will also include the number of brown treesnake kills during training actions.

The annual report will also include a description of all actions that occurred at GSN related to Divert (including humanitarian operations, flight diversions, and joint military exercises).

- I(c) The USAF will convene an annual coordination meeting or conference call prior to 28 February of each year, starting in 2015, to discuss findings within the compliance report and adapt avoidance, minimization, and conservation measures to further reduce incidental take.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authority to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. The term "conservation recommendations" has been defined as suggestions

from the Service regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's 7(a)(1) responsibilities for these species.

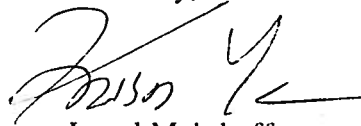
1. The USAF should implement a monitoring project, using qualified avian biologists, when joint military exercises begin operating out of GSN (anticipated in 2016 or 2017). The monitoring project could occur in habitats experiencing noise above 100 dBA from take-off and landings of fighter jets (see Figure 3). The monitoring project could be used to:
 - Determine noise levels in nightingale reed-warbler territories surrounding the airport when fighter jets take-off and land at GSN.
 - Determine if take-off and landing of fighter jets from GSN cause a behavioral response (i.e. startle, alert, flushing, stress, etc.) in nightingale reed-warblers.
 - Determine the effect of take-off and landing of fighter jets from GSN on nightingale reed-warbler breeding success in areas surrounding the airport.
 - Determine population trends and territory fidelity of nightingale reed-warblers surrounding the airport.
2. The USAF should implement rat and/or cat control at nightingale reed-warbler territories, and monitor nightingale reed-warbler nest success, to determine how predator control affects breeding success.

REINITIATION-CLOSING STATEMENT

This concludes formal consultation on this action. As required in 50 CFR § 402.16, reinitiation of consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operation causing such take must cease pending reinitiation.

As stated in the Conclusion (above), the Service's finding of non-jeopardy is based in large part on the conservation measures. Should there be a failure to carry out any or all of the described measures, or if the measures are not effective, or if these measures are modified in any way without Service coordination, reinitiation of consultation will be required. If you have any questions regarding this Biological Opinion, please contact Rachel Rounds at (808) 792-9400.

Sincerely,


for Loyal Mehrhoff
Field Supervisor

REFERENCES

- Andersen, D. E., O. J. Rongstad, and W. R. Mytton. 1989. Response of nesting red-tailed hawks to helicopter overflights. *Condor* 91 :296-299.
- Awbrey, F.T. and D. Hunsaker II. 1997. Effects of fixed-wing military aircraft noise on California gnatcatcher reproduction. *Acoustical Society of America* 102(5): 3177.
- Barber, J.R., K.R. Crooks, and K.M. Fristrup. 2010. The costs of chronic noise exposure for terrestrial organisms. *Trends in Ecology and Evolution* 25(3): 180-189.
- Bayne, E.M., L. Habib, and S. Boutin. 2008. Impacts of chronic anthropogenic noise from energy-sector activity on abundance of songbirds in the boreal forest. *Conservation Biology* 22(5): 1186-1193.
- Brown, L. 2000. Overview of Research on the Effects of Noise on Wildlife. Pages 10-14 in *Terra Borealis: Effects of Noise on Wildlife Conference Proceedings*. August 22-23, 2000.
- Brown Treesnake Technical Working Group (BTS TWG) 2009. Draft Brown Treesnake Control Plan. April 2009. 37 pp. + Appendix.
- Brumm, H. 2004. The impact of environmental noise on song amplitude in a territorial bird. *Journal of Animal Ecology* 73:434-440.
- Camp, R.J., T.K. Pratt, F. Amidon, A.P. Marshall, S. Kremer, and M. Laut. 2009. Status and trends of the land bird avifauna on Tinian and Aguiguan, Mariana Islands. Appendix 3.1 in *Terrestrial Resource surveys of Tinian and Aguiguan, Mariana Islands, 2008*. Working Draft. U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, HI. 65 pp.
- Conomy, J. T., J. A. Collazo, J. A. Dubovsky, and W. J. Fleming. 1998a. Dabbling duck behavior and aircraft activity in coastal North Carolina. *Journal of Wildlife Management* 62:1127-1134.
- Conomy, J.T., J.A. Dubovsky, J.A. Collazo, and W.J. Fleming. 1998b. Do black ducks and wood ducks habituate to aircraft disturbance? *Journal of Wildlife Management* 62(3):1135-1142.
- Craig, R.J. 1992. Territoriality, habitat use, and ecological distinctness of an endangered Pacific island reed-warbler. *Journal of Field Ornithology* 63:436-444.
- Delaney, D.K., T.G. Grubb, P. Beier, L.L. Pater, M. Hildegard Reiser. 1999. Effects of helicopter noise on Mexican spotted owls. *Journal of Wildlife Management* 63(1): 60-76.
- Delaney, D.K., L.L. Pater, R.J. Dooling, B. Lohr, B.F. Brittan-Powell, L.L. Swindell, T.A. Beaty, L.D. Carlile, E.W. Spadgenske, B.A. MacAllister, and R.H. Melton. 2002.

- Assessment of training noise impacts on the red-cockaded woodpecker: 1998-2000. ERDC/CERL TR-02-32. 101 pp.
- Dooling, R.J. and A.N. Popper. 2007. The effects of highway noise on birds. Prepared for the California Department of Transportation. Sacramento, CA. 74 pp.
- Engbring, J., F.L. Ramsey, and V.J. Wildman. 1986. Micronesian forest bird survey, 1982: Saipan, Tinian, Agiguan, and Rota. U.S. Fish and Wildlife Service, Honolulu, Hawaii. 143 pp.
- Foppen, R. and R. Reijnen. 1994. The effects of car traffic on breeding bird populations in Woodland. II. Breeding dispersal of male willow warblers (*Phylloscopus trochilus*) in relation to the proximity of a highway. *Journal of Applied Ecology* 31:95-101.
- Francis, C.D., C.P. Ortega, and A. Cruz. 2011a. Noise pollution filters bird communities based on vocal frequency. *PLoS ONE* 6(11): e27052.
- Francis, C.D., J. Paritsis, C.P. Ortega, and A. Cruz. 2011b. Landscape patterns of avian habitat use and nest success are affected by chronic gas well compressor noise. *Landscape Ecology* 26: 1269-1280.
- Frid, A. 2003. Dall's sheep responses to overflights by helicopter and fixed-wing aircraft. *Biological Conservation* 110:387-399.
- Gill, J.A., K. Norris, W.J. Sutherland. 2001. Why behavioural responses may not reflect the population consequences of human disturbance. *Biological Conservation* 97:265-268.
- Gourley, J.E. and N.C. Johnson. 2002. Effects of land clearing on the nightingale reed-warbler (*Acrocephalus luscini*), Saipan, Commonwealth of the Northern Mariana Islands. Poster presented at 23rd International Ornithological Conference 2002, Beijing, China.
- Habib, L., E.M. Bayne, and S. Boutin. 2007. Chronic industrial noise affects pairing success and age structure of ovenbirds *Seiurus aurocapilla*. *Journal of Applied Ecology* 44: 176-184.
- Halfwerk, W., L.J.M. Holleman, C.M. Lessells, and H. Slabbekoorn. 2011. Negative impact of traffic noise on avian reproductive success. *Journal of Applied Ecology* 48:210-219.
- Hunsaker II, D. and J. Rice. 2006. The effects of helicopter noise on the coastal California gnatcatcher at Marine Corps Air Station Miramar. Prepared for Marine Corps Air Bases West Area, San Diego, CA. 172 pp.
- Johnson, N.C. 2003. An assessment of the nightingale reed-warbler (*Acrocephalus luscini*) population in American Memorial Park on Saipan, Northern Mariana Islands. Honolulu, HI. 12pp.
- Komenda-Zehnder, S., M. Cevallos, and B. Bruderer. 2003. Effects of disturbance by aircraft

- overflight on waterbirds an experimental approach. International Bird Strike Committee, Warsaw 5-9 May 2003.
- Krausman, P. R., M. C. Wallace, C. L. Hayes, and D. W. DeYoung. 1998. Effects of jet aircraft on mountain sheep. *Journal of Wildlife Management* 62:1246-1254.
- Krausman, P. R., L. K. Harris, C. L. Blasch, K. K. G. Koenen, and J. Francine. 2004. Effects of military operations on behavior and hearing of endangered Sonoran pronghorn. *Wildlife Monographs* No. 157. 41 pp.
- Kuitunen, M., E. Rossi, and A. Stenroos. 1998. Do highways influence density of land birds. *Environmental Management* 22(2): 297-302.
- Landon, D. M., P. R. Krausman, K. K. G. Koenen, and L. K. Harris. 2003. Pronghorn use of areas with varying sound pressure levels. *The Southwestern Naturalist* 48:725-728.
- Larkin, R.P. 1996. Effects of military noise on wildlife: a literature review. USACERL Technical Report 96/21. 87 pp.
- Lawler, J. P., A. J. Magoun, C. T. Seaton, C. L. Gardner, R. D. Boertje, J. M. Ver Hoef, and P.A. Del Vecchio. 2005. Short-term impacts of military overflights on caribou during calving season. *Journal of Wildlife Management* 69:1133-1146.
- Maier, J. A. K., S. M. Murphy, R. G. White, and M. D. Smith. 1998. Response of caribou to overflights by low-altitude jet aircraft. *Journal of Wildlife Management* 62:752-766.
- Manci, K.M., D.N.Gladwin, R. Vilella, and M.G. Cavendish. 1988. Effects of aircraft noise and sonic booms on domestic animals and wildlife: a literature synthesis. U.S. Fish and Wildlife Service National Ecology Research Center, Ft. Collins, CO. NERC-88/29. 88 pp.
- Marshall, A. 2012. Comments on data on nightingale reed-warbler singing frequency.
- Mosher, S.M. 2006. Ecology of the endangered nightingale reed-warbler (*Acrocephalus luscini*) on Saipan, Micronesia. Master's thesis, University of Idaho, Moscow. 111 pp.
- National Park Service. 1994. Report to Congress: report on the effects of aircraft overflights on the National Park system, September 12, 1994. Accessed at: <http://www.nonoise.org/library/npreport/intro.htm>.
- Ortega, C.P. 2012. Effects of noise pollution on birds: a brief review of our knowledge. *Ornithological Monographs* 74(1): 6-22.
- Palmer, A. G., D. L. Nordmeyer, and D. D. Roby. 2003. Effects of jet aircraft overflights on parental care of peregrine falcons. *Wildlife Society Bulletin* 31: 499-509.
- Pater, L.L., T.G. Grubb, and D.K. Delaney. Recommendations for improved assessment of noise impacts on wildlife. *Journal of Wildlife Management* 73(5): 788-795.

- Rounds, R. 2012. Personal comments on the tolerance of nightingale reed-warblers to noise disturbance.
- Slabbekoorn, H. and M. Peet. 2003. Birds sing at a higher pitch in urban noise. *Nature* 424:267.
- Slabbekoorn, H. and E.A.P. Ripmeester. 2007. Birdsong and anthropogenic noise: implications and applications for conservation. *Molecular Ecology* 17:1-12.
- Trimper, P. G., N. M. Standen, L. M. Lye, D. Lemon, T. E. Chubbs, and G. W. Humphries. 1998. Effects of low-level jet aircraft noise on the behaviour of nesting osprey. *Journal of Applied Ecology* 35:122-130.
- U.S. Air Force. 2012. Draft Environmental Impact Statement for proposed Divert Activities and Exercises, Guam and Commonwealth of the Northern Mariana Islands (CNMI). Pacific Air Forces, Joint Base Pearl Harbor-Hickam, Hawaii.
- USFWS. 1970. Conservation of endangered species and other fish and wildlife. *Federal Register* 35: 18319-18322.
- _____. 1998a. 1997 forest bird survey, Saipan, CNMI: nightingale reed-warbler (*Acrocephalus luscini*a) assessment. Unpublished report, December 1998. 14 pp. + attachments.
- _____. 1998b. Recovery plan for the nightingale reed-warbler (*Acrocephalus luscini*a). Portland, Oregon. 72pp.
- _____. 2006. Transmittal of Guidance: Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California. Arcata, California. 175pp.
- _____. 2008. Programmatic Biological Opinion Regarding the Reestablishment, Management, and Use of the Saipan Upland Mitigation Bank, Saipan. Service File Number 2008-F-0033. 42 pp.
- _____. 2010. Biological Opinion for the Mariana Islands Range Complex, Guam and the Commonwealth of the Northern Mariana Islands 2009-2014. 96 pp.
- U.S. Navy. 2010. Final Environmental Impact Statement for the Mariana Islands Range Complex. Pearl Harbor, Hawaii.
- Vanderwerf, E. 2000. A study to determine the effects of noise from military training on the endangered Oahu elepaio. Prepared for U.S. Army Engineer District. Honolulu, Hawaii. 220 pp.
- Van Tyne, J. and A.J. Berger. 1976. *Fundamentals of Ornithology*, second edition. New York: John Wiley & Sons.

- Ward, D. H., R. A. Stehn, W. P. Erickson, and D. V. Derksen. 1999. Response of fall-staging brant and Canada geese to aircraft overflights in southwestern Alaska. *Journal of Wildlife Management* 63:373-381.
- Watson, J. W. 1993. Responses of nesting bald eagles to helicopter surveys. *Wildlife Society Bulletin* 21: 171-178.

Appendix 1. Not Likely to Adversely Affect Determination for the Mariana Common Moorhen, Mariana Swiftlet, and Green Sea Turtle

This Appendix is in response to your request for our concurrence with your determination that the Divert Project, as described above, will not adversely affect the endangered Mariana common moorhen, Mariana swiftlet, or green sea turtle. The findings and recommendations in this consultation are based on: (1) your Biological Assessment dated August, 2012; and (2) other information available to us. A complete administrative record is on file in our office. This response is in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*).

Mariana common moorhen

Listing Status

The Mariana common moorhen was federally listed as an endangered species in 1984 (USFWS 1984). The recovery plan for the Mariana common moorhen was finalized in 1991 (USFWS 1991a, 55 pp.). A five-year status review completed in 2009 determined that the Mariana common moorhen still meets the definition of endangered (USFWS 2009, p. 9).

Historic and Current Distribution

The Mariana common moorhen is currently found on Saipan, Tinian, Rota, and Guam. The Mariana common moorhen is believed to be extirpated from Pagan due to the volcanic eruption in May, 1981, and destruction of vegetation by feral ungulates (Stinson et al. 1991, pp. 41–42). In 2004, it was estimated that there were approximately 90 Mariana common moorhen on Guam, 154 on Saipan, 41 on Tinian, and only two individuals on Rota (Takano and Haig 2004, p. 247 (Table 9)). On Guam, the number of Mariana common moorhens has recently decreased at the Fena Valley Reservoir potentially due to the loss of *Hydrilla verticillata*, a wetland plant used as a nesting substrate, as a result of eutrophication of the lake after a typhoon (Brooke and Grimm 2008, p. 2). While it is possible that the Fena Reservoir birds moved to other wetlands and the Guam population has not declined overall, comprehensive surveys on Guam would be needed to determine the impact of the loss of habitat at Fena Lake to the overall population. Moorhen surveys are conducted by the CNMI Division of Fish and Wildlife at 22 wetland sites on Saipan. Data from these surveys shows that population numbers were stable on Saipan from 2007-2010 (CNMI DFW 2010).

Ecology and Life History

The Mariana common moorhen prefers wetlands with diverse, non-persistent, emergent vegetation containing deep and shallow water areas with equal areas of vegetation cover and open water (Ritter and Savidge 1999, p. 286; Stinson et al. 1991, p. 39). Primary habitats (as defined in the recovery plan) include: Agana marsh, Fena Valley reservoir, and the Naval Station Marsh, Guam; Lake Hagoi on Tinian; and Lake Susupe, Puntan Muchot, and Garapan wetlands on Saipan (USFWS 1991a, pp. 4–16). Several secondary wetland habitats were identified on Guam and Saipan; only one secondary wetland (Magpo) on Tinian was considered important for the recovery of the species (USFWS 1991a, pp. 4–16).

Mariana common moorhens feed on plant and animal matter in or near wetlands (USFWS 1991a). Seale (1901, p. 31) found grass, insects, and larvae in the stomachs of the Mariana

common moorhen on Guam. Pratt et al. (1987, p. 128) reported that Mariana common moorhen eat mollusks and plants. Little is known about the reproduction of the Mariana common moorhen (USFWS 1991a, p. 17). Nests have been constructed in *Scirpus littoralis*, *Panicum muticum*, and *Cyperus* spp. (Ritter 1994, p. 128; USFWS 1996, p. 7). Birds often nest multiple times in a year and juveniles from early broods are known to stay on their natal territory and help rear siblings from later broods (Ritter 1994, p. 130; Takano 2003, pp. 4–5).

Threats

Currently, the main two threats to the Mariana common moorhen are: (1) loss and degradation of wetland habitat, including filling, alteration of hydrology, invasion of habitat by non-native plants, and unrestricted grazing of domestic and feral ungulates; and 2) predation by introduced species (USFWS 1991a, p. 19; USFWS 1996, pp. 11–12).

Conservation Needs

Only interim recovery objectives were identified in the recovery plan due to a lack of data necessary to fully understand the needs of viable populations of this species (USFWS 1991a, p. 21). The primary task is to promote the survival of the species by providing stable, productive habitat throughout the historical Mariana common moorhen range. This entails 1) securing and managing all primary habitats to maximize the habitat conditions; 2) maintaining the secondary habitats as wetlands or creating new wetlands for those that are lost; and 3) minimizing mortality from predation, poaching, and other factors including human disturbance.

Environmental baseline

In 2001, an island-wide survey produced an estimate of 154 Mariana moorhens on Saipan (Takano and Haag 2004, p. 245). The CNMI Division of Fish and Wildlife conducts quarterly surveys at 22 wetlands on Saipan. From 2007 to 2010 the total number of moorhens detected at these sites has remained stable between 70 to 80 moorhens per survey (CNMI DFW 2010, p. 44).

Surveys conducted from January to March of 2012 by USAF contractors detected a single adult Mariana common moorhen at the Coral Ocean Point golf course east pond. No moorhens were detected at the GSN water catchment basin or the Coral Ocean Point golf course west pond, and no other potential moorhen habitat is located within the action area. The Coral Ocean Point golf course east pond has an impervious lining that inhibits the growth of shoreline vegetation. The moorhen was observed roosting and taking cover under a *Bougainvillea spectabilis* plant along the northeastern shoreline. Mariana common moorhens have also been detected repeatedly at the Coral Ocean Point golf course east pond by the CNMI DFW during quarterly waterbird surveys. Due to the lack of vegetation around the golf course pond, suitable habitat for Mariana common moorhen breeding is not present, and Mariana common moorhen have not been observed nesting at either golf course pond. There are no moorhens located near the Saipan port facilities or the Saipan Upland Mitigation Bank.

Not Likely to Adversely Affect: Mariana common moorhen

The Coral Ocean Point golf course east pond is located approximately 650 meters from the southern edge of GSN and from the nearest potential construction site. Noise from construction of Divert facilities is unlikely to disturb Mariana common moorhens at the east pond because moorhens at this pond would be habituated to noise disturbance from the airport, golf course

operations, and a nearby helicopter launching pad. Mariana moorhens are not found close enough to airport runways to be at risk of a bird strike.

However, increased aircraft operations at GSN under Divert operations will cause an increase in ambient noise at the east pond. Operation of civilian 767 at GSN result in a noise level of approximately 93 dBA from at the east pond (Table 1) from take-offs and landings. Under implementation of the Divert Project, noise levels at the east pond will rise to approximately 118 dBA with take-off and landings of F-22 or similar fighter jets.

There have been numerous studies on the impacts of aircraft overflights to wildlife including studies of waterbirds (e.g., Ward, et al. 1999; Conomy, et al. 1998 a,b; Komenda-Zehnder, et al. 2003). These studies report a wide range of reactions to overflights depending on the biology of the species, its previous exposure to overflights, whether the species is breeding, the type of aircraft, the altitude of the aircraft, and the lateral distance between aircraft and the species. The variability in these reactions and their specific circumstances make it difficult to be certain how a particular species, such as the Mariana moorhen, will react to aircraft overflights.

Individuals with previous exposure to aircraft overflights may display less reaction to overflights than individuals without previous exposure (Andersen et al. 1989, Conomy et al. 1998b). This reduced reaction is believed to be a sign that these individuals have habituated to these overflights. This habituation, however, may be individual or species specific. For example, Conomy and others (1998b) found that black ducks (*Anas rubripes*) became habituated to aircraft noise with continued exposure while wood ducks (*Aix sponsa*) did not.

Given that Mariana common moorhens have been using the east pond for at least a decade, it can be assumed that these individuals have habituated to the current level of aircraft overflights. There is no moorhen habitat near Andersen Air Force Base on Guam to use as a comparison airport with high aircraft overflights. Moorhens on Saipan have also been found in other highly disturbed and noisy locations, including the flooded parking lot of an abandoned garment factory at a busy intersection on Saipan (Rounds 2012, pers com). On Guam, Mariana common moorhens nest in a pond immediately adjacent to a busy parking lot at an industrial fuel facility (Rounds 2012, pers com.). Use of these sites indicates that moorhens can tolerate high levels of human disturbance.

There will be a long-term and permanent increase in aircraft operations from the proposed Divert Project, and noise levels from aircraft overflights will increase with F-22 and other fighter jets operating out of GSN. Moorhens do not breed at the east pond so disturbance of nesting birds will not occur. Moorhens using the east pond may notice the increase in noise levels from aircraft overflights. However, given their tolerance of human disturbance and habituation to current noise levels, we do not believe this disturbance will rise to the level of harass or harm as defined by the ESA. Therefore, we have determined it is discountable that a Mariana common moorhen would be adversely affected by increased aircraft overflights at GSN given that moorhens are not breeding at the site, appear tolerant of some levels of human disturbance, and are habituated to the current noise levels from GSN.

Because comprehensive biosecurity measures, including HACCP planning and redundant brown treesnake inspections, will be implemented by the USAF to keep brown treesnakes, and other invasive species, off of Saipan, we do not expect adverse effects to Mariana moorhens from introduction of invasive species.

Mariana swiftlet

Listing Status

The Mariana swiftlet was federally listed as endangered on August 27, 1984 (USFWS 1984). A five-year status review was completed in 2010 (USFWS 2010) and a recovery plan for the Mariana swiftlet was completed in 1991 (USFWS 1991b).

Historic and Current Distribution

The Mariana swiftlet is endemic to Guam and the four southern islands of the CNMI (Cruz et al. 2008, p. 233). A population also became established on Oahu, Hawaii, between 1962 and 1965 (Wiles and Woodside 1999, p. 57). Most historical information on the species comes from Guam, where it was reported as being common and the third most abundant species seen during roadside counts, but declined to approximately its current levels by the late 1970s (USFWS 1991b, p. 7). The total number of Mariana swiftlets occurring within its historical range is currently over 6,000 individuals and it currently occurs on Guam (in three known caves within the Naval Munitions Site), Aguiguan (in nine known caves), and Saipan (ten known caves), and is considered extirpated from Tinian and Rota (CNMI DFW 2010, pp. 45-46; Navy 2011, p. 4; USFWS 1991b, pp. 8, 13-14; Engbring et al. 1986, pp. 58-59). Long-term data from swiftlet surveys at 10 caves on Saipan shows that swiftlet numbers have been steadily increasing, to a total count of over 5,500 individuals in 2010 (CNMI DFW 2010).

Ecology and Life History

The Mariana swiftlet nests and roosts in limestone caves with the following characteristics: entrances typically a minimum of 2 m (6.2 ft) high; chambers with dark zones; and fresh air (USFWS 1991b, p. 2). Most birds leave their cave at dawn and return at sunset, but often return from foraging to roost in caves during the day. Swiftlets navigate through the darkest portions of caves using echolocation (Vogt and Williams 2004).

Mariana swiftlets capture prey while flying, and foraging has been observed to occur over a wide variety of habitat types, including cleared and forested areas, but they appear to favor ridge crests and open grassy savanna areas (USFWS 1991b, p. 6). Large flocks have been reported to form in the evening with birds congregating and feeding close to the ground until it is dark (Chantler and Driessens 1995, p. 130). An analysis of swiftlet guano collected from occupied caves on Saipan found that the remains of flying ants (*Formicidae*) were common, as were the remains of beetles (*Coleoptera*) (Kershner et al. 2007).

Eggs are laid in cup-shaped nests made of moss and saliva attached to cave walls or ceilings. A single egg is laid, usually between January and July, which is incubated for approximately 23 days with fledging occurring after 47 days (Reichel et al. 2007). Both adults care for the nestling which is, on average, fed by each adult 1.8 times a day (Morton and Amidon 1996).

Threats to the Mariana Swiftlet

The restricted distribution of Mariana swiftlets, along with its small population size and dependence on caves, makes the species vulnerable to threats. The causes for the decline of Mariana swiftlets are mostly unknown, but human disturbance, predation, pesticides, and disease have all been hypothesized as having a role. Swiftlets have been documented to flush or fail to enter their caves when humans are near or within their caves (Wiles and Woodside 1999, pp. 57, 61). Swiftlet sensitivity to human presence has resulted in injuries to chicks and adults and could result in damage to eggs (Wiles and Woodside 1999, p. 61). Sources of human disturbance have included Japanese soldiers during World War II, guano mining, hunters, hikers, and vandalism.

While the introduction of brown treesnake is known to have caused the extirpation of many bird species in Guam and CNMI, it is not known whether it has significantly affected swiftlets. Brown treesnake predation on Mariana swiftlets is considered to be a regular event and only those birds able to find nest or roost sites on high, smooth walls and ceilings are able to avoid snake predation. In August, 2011, seven brown treesnakes were observed climbing the walls of the Mahlec cave on Guam (Mosher 2011, pers. com.). The use of pesticides such as DDT has been suspected of causing the decline of swiftlet populations on Guam (Diamond 1984, p. 452), but the concentrations of pesticide residues found in swiftlet guano have not supported this hypothesis (Grue 1985, p. 301). On Saipan, non-native cockroaches are known to destroy swiftlet nests by consuming the saliva that holds the nests to the walls or ceilings (Cruz et al. 2008, p. 242). Savidge (1986, p. 9) investigated the role of disease in the decline of birds on Guam and found that there is no evidence that it has played a significant role. The typhoons that frequently occur in the area may cause periodic declines in swiftlet populations, but are not expected to threaten the species as a whole since the species has survived numerous such events during its evolutionary history (USFWS 1991b, p. 22).

Conservation Needs

The primary threats to the species continue to be predation by the brown treesnake and disturbance at nesting caves. However, other introduced predators and introduced insect species also may have negative impacts to the species. Efforts to minimize disturbance and control snakes and other predators at some nesting colonies have been undertaken. However, additional efforts are needed to help recover the species.

Ongoing Conservation Actions

Brown treesnake trapping occurs at the three occupied swiftlet caves on Guam on the Naval Munitions Site. No predator trapping currently occurs at caves on Saipan or Aguiguan. Quarterly swiftlet departure counts are conducted on Saipan and Guam to monitor swiftlet population numbers.

Environmental Baseline

Swiftlets have been detected foraging over most areas of Saipan, though they are less frequently detected in urban areas (Marshall 2011, pers. comm.). Ten caves are known in Saipan, in the central portion of the island; however, swiftlets are regularly seen foraging in areas where no caves have been found. The nearest swiftlet cave to GSN is more than three kilometers (2 miles) away and the nearest cave to the Saipan port is approximately 1,200 meters away (0.75 mile). There are no known caves in the Saipan Upland Mitigation Bank, though swiftlets frequently

forage there. No Mariana swiftlets were detected during bird surveys at GSN for the proposed project. Island-wide surveys conducted by the Service and CNMI DFW on established transects on Saipan detected swiftlets primarily in the central parts of the island, but swiftlets were also detected in the vicinity of GSN (USFWS 2008).

Not Likely to Adversely Affect: Mariana swiftlet

There are no Mariana swiftlet caves near the Saipan airport or seaport, and no adverse impacts to swiftlet caves from the Divert project are expected. Mariana swiftlets are not detected frequently in the vicinity of GSN. If construction noise or noise from aircraft overflights disturbs swiftlets, they will easily be able to avoid the disturbance and forage elsewhere. The clearing of 4.5 ha of second-growth forest for the Divert Project would also not adversely affect the availability of foraging habitat in the area, or on Saipan. There have been no reports of aircraft striking Mariana swiftlets and the chance of such a strike is discountable given the distance from Mariana swiftlet caves and low presence of swiftlets in the area. Mariana swiftlets may forage near the Saipan seaport; however, this is an industrial port and the low-level of construction noise from the Divert Project in this area is unlikely to adversely affect a Mariana swiftlet. Mariana swiftlets commonly forage in the Saipan Upland Mitigation Bank. Mitigation actions, such as habitat restoration and invasive species removal, for the nightingale reed-warbler that occur in the SUMB will also beneficially affect the Mariana swiftlet. Overall, effects from the proposed project are discountable. Therefore, the project may affect, but will not adversely affect, the Mariana swiftlet, and mitigation actions may benefit the species.

Because comprehensive biosecurity measures, including HACCP planning and redundant brown treesnake inspections, will be implemented by the USAF to keep brown treesnakes, and other invasive species, off of Saipan, we do not expect adverse effects to Mariana swiftlets from introduction of invasive species.

Green sea turtle

The following section summarizes sea turtle biology based on the information in recovery plans and five-year status reviews developed by the NMFS and Service (NMFS and USFWS 1998, 95 pp.; 2007, 105 pp.). Sea turtles are highly migratory, globally distributed, and generally found in tropical and subtropical waters along continental coasts and islands between 30° north and 30° south latitude and, to a lesser extent, in subtropical waters with temperatures above 20° C. The geographic range of sea turtles includes the Caribbean Sea, Atlantic, Pacific, and Indian Oceans and associated bodies of water.

Sea turtles bury their eggs in the sand in upper areas of oceanic beaches. Reproductive maturity occurs at ages ranging from 20 to 50 years and varies by species. Female sea turtles have high site fidelity to their hatching (natal) beaches, returning close to their own hatching site to lay their nests. Females may nest multiple times over a given nesting season. Nesting seasons typically occur at semi-regular intervals, with inter-nesting intervals ranging between two to more than five years depending on the species. Hatchlings emerge 45 to 90 days after a nest is laid. Emerging hatchlings navigate toward the water using visual cues; they move toward the brighter horizon and away from darker silhouettes formed by dune line, tree lines, or cliff walls (Tuxbury and Salmon 2005, p. 312). In addition to nesting, green sea turtles may also use

beaches to haul out and bask, although this behavior has never been documented in Guam or the CNMI (Kelly, 2009, pers. comm.; Wusstig 2009, pers. comm.).

Numbers of breeding green sea turtle populations in Hawaii, Australia, and Japan are increasing (Chaloupka et al. 2008, p. 299; NMFS and Service 2007, p. 13) and numbers of turtles nesting on Guam have been stable (NMFS and Service 2007, p. 13). Approximately 1,000 to 2,000 green turtles inhabit island reef areas in Guam and the southern CNMI (Kolinski et al. 2004, pp. 98, 111). In 1995 and 2001 (Tinian), 1999 (Saipan), and 2003 (Rota), the majority of individuals observed in the surrounding waters were juveniles or sub adults (Kolinski et al. 2001, pp. 59, 66; Kolinski et al. 2004, p. 107; Kolinski et al. 2006, pp. 514, 517; Pultz et al. 1999, p. 92).

In CNMI, green turtle nesting occurs from March to August with some year round nesting documented. The CNMI DFW Sea Turtle Program has monitored green sea turtle nesting activity on Saipan since 1999, and has documented 4 to 18 nests laid per year (CNMI DFW unpublished annual reports). There are two nesting beaches found within the action area: Obyan beach and Coral Ocean Point beach.

Not Likely to Adversely Affect: Green sea turtle

No green sea turtle nesting beaches will be impacted by construction of Divert facilities. Hatchlings or nesting adult females may be exposed to noise from aircraft overflights on Obyan or Coral Ocean Point beaches. Obyan beach is located approximately 1,000 meters from GSN and in the worst-case scenario would have noise levels from aircraft overflights reaching 65-70 dBA. Coral Ocean Point beach is located approximately 900 meters from GSN, and noise levels from aircraft overflights could reach 70-85 dBA in a worst-case scenario. Noise contour lines under baseline conditions do not reach either beach, indicating that current noise levels are below 65 dBA.

Given the small number of green sea turtles nesting on Saipan, and the short period of time that hatchlings or adult female green sea turtles spend on beaches, there is only a small chance that aircraft overflights, which would occur for a maximum of 8 weeks a year, reaching 85 dBA (at Coral Ocean Point) would occur at the same time a hatchling turtle or adult turtle were on the beach. Based on observations of adult green sea turtles at Obyan beach and their reactions to aircraft overflights, it is not expected that the turtles would be adversely affected by a temporary increase in noise (Summers 2012, pers. com.). Therefore, the Divert Project may affect, but will not adversely affect, green sea turtles.

References

- Andersen, D. E., O. J. Rongstad, and W. R. Mytton. 1989. Response of nesting red-tailed hawks to helicopter overflights. *Condor* 91 :296-299.
- Brooke, A. and G. Grimm. 2008. Mariana common moorhen surveys on Fena Reservoir, Naval Munitions Site, Guam (FY 2004-2008). NAVFAC Marianas Environmental, Guam. 3pp.

- Chaloupka, M., K.A. Bjorndal, G.H. Balazs, A.B. Bolten, L.M. Ehrhart, C.J. Limpus, H. Suman, S. Troeng, and M. Yamaguchi. 2008. Encouraging outlook for recovery of a once severely exploited marine megaherbivore. *Global Ecology and Biogeography* 17(2):297-304.
- Chantler, P. and G. Driessens. 1995. *Swifts: A guide to the swifts and treeswifts of the world*. Pica Press, UK.
- CNMI DFW. 2010. CNMI Wildlife Restoration Annual Report FY 2010. Division of Fish and Wildlife, Department of Lands and Natural Resources. Saipan, MP. 77 pp.
- Conomy, J. T., J. A. Collazo, J. A. Dubovsky, and W. J. Fleming. 1998a. Dabbling duck behavior and aircraft activity in coastal North Carolina. *Journal of Wildlife Management* 62:1127-1134.
- Conomy, J.T., J.A. Dubovsky, J.A. Collazo, and W.J. Fleming. 1998b. Do black ducks and wood ducks habituate to aircraft disturbance? *Journal of Wildlife Management* 62(3):1135-1142.
- Cruz, J.B., S.R. Kremer, G. Martin, L.L. Williams, and V.A. Camacho. 2008. Relative abundance and distribution of Mariana swiftlets (Aves: Apodidae) in the Northern Mariana Islands. *Pacific Science*. 62(2): 233-246.
- Engbring, J., F.L. Ramsey, and V.J. Wildman. 1986. *Micronesian forest bird survey, 1982: Saipan, Tinian, Agiguan, and Rota*. U.S. Fish and Wildlife Service, Honolulu, Hawaii. 143 pp.
- Diamond, J.M. 1984. Possible effect of unrestricted pesticide use on tropical birds. *Nature* 310:452.
- Grue, C.E. 1985. Pesticides and the decline of Guam's native birds. *Nature* 316:301.
- Kelly, I. 2009. Electronic mail dated May 6, 2009, regarding sea turtle activity within the Commonwealth of the Northern Mariana Islands and Guam.
- Kershner, E.L., R. Kohley, B. Hudgens, and D.K. Garcelon. 2007. Assessment of Mariana Swiftlet (*Aerodramus bartschi*) diet and insect availability on Saipan and Rota, Mariana Islands. Institute for Wildlife Studies, Arcata, CA.
- Kolinski, S.P., D.M. Parker, L.I. Ilo, and J.K. Ruak. 2001. An assessment of the sea turtles and their marine and terrestrial habitats at Saipan, Commonwealth of the Northern Mariana Islands. *Micronesica* 34(1):55-72.
- _____, L.I. Ilo, and J.M. Manglona. 2004. Green turtles and their marine habitats at Tinian and Aguijan, with projections on resident turtle demographics in the southern arc of the Commonwealth of the Northern Mariana Islands. *Micronesica* 37(1):97-118.
- _____, R.K. Hoeke, S.R. Holzwarth, L.I. Ilo, E.F. Cox, R.C. O'Conner, and P.S. Vroom. 2006. Nearshore distribution and an abundance estimate for green sea turtles, *Chelonia mydas*,

- at Rota Island, Commonwealth of the Northern Mariana Islands. *Pacific Science* 60(4):509-522.
- Komenda-Zehnder, S., M. Cevallos, and B. Bruderer. 2003. Effects of disturbance by aircraft overflight on waterbirds an experimental approach. International Bird Strike Committee, Warsaw 5-9 May 2003.
- Marshall, A. 2011. Communication regarding swiftlet distribution on Saipan.
- Morton, J.M. and F.A. Amidon. 1996. Development of field techniques for studying and restoring the Vanikoro swiftlet (*Aerodramus vanikorensis bartschi*) on Guam. Unpublished report. 34pp.
- Mosher, S. 2011. Communication regarding behavior of brown treesnakes in caves on Guam.
- National Marine Fisheries Service and U.S. Fish and Wildlife Service (NMFS and Service). 1998. Recovery Plan for U.S. Pacific Populations of the Green Turtle (*Chelonia mydas*). National Marine Fisheries Service, Silver Spring, MD. 95 pp.
- _____. 2007a. Green sea turtle (*Chelonia mydas*) five-year review: summary and evaluation. 105 pp.
- Navy, U.S. 2011. MIRC Annual Report for FY 2011. Honolulu, Hawaii. 4pp.
- Pratt, H.D., P.L. Bruner, and D.G. Berrett. 1987. A field guide to the birds of Hawaii and the tropical Pacific. Princeton, N.J.: Princeton University Press.
- Pultz, S., D. O'Daniel, S. Krueger, H. McSharry, and G. Balazs. 1999. Marine turtle survey on Tinian, Mariana Islands. *Micronesica* 31(2):85-94.
- Reichel, J.D., C.T. Collins, D.W. Stinson, and V.A. Camacho. 2007. Growth and development of the Mariana swiftlet. *Wilson Journal of Ornithology* 119:686-692.
- Ritter, M.W. 1994. Notes on nesting and growth of Mariana common moorhens on Guam. *Micronesia* 27(1/2):127-132.
- _____ and J.A. Savidge. 1999. A predictive model of wetland habitat use on Guam by endangered Mariana common moorhens. *Condor* 101:282-287.
- Rounds, R. 2012. Comments on Mariana common moorhen distribution on Saipan and Guam.
- Savidge, J.A. 1986. The role of disease and predation in the decline of Guam's avifauna. Ph.D. dissertation, University of Illinois, Champaign. 79 pp.
- Seale, A. 1901. Report of a mission to Guam. *Occasional Papers of the Bernice P. Bishop Museum* 1: 17-128.

- Stinson, D.W., M.W. Ritter, and J.D. Reichel. 1991. The Mariana common moorhen: decline of an island endemic. *Condor* 93:38-43.
- Summers, T. 2012. Comments regarding the potential effects of increased noise from military jet overflights on nesting green sea turtles.
- Takano, L.L. 2003. Seasonal movement, home range, and abundance of the Mariana common moorhen (*Gallinula chloropus guami*) on Guam and the Northern Mariana Islands. Master's thesis, Oregon State University, Oregon. 101 pp.
- _____. and S.M. Haig. 2004. Distribution and abundance of the Mariana subspecies of the common moorhen. *Waterbirds* 27(2):245-250.
- Tuxbury, S. M. & M. Salmon. 2005. Competitive interactions between artificial lighting and natural cues during seafinding by hatchling marine turtles. *Biological Conservation* 121: 311-316.
- USFWS. 1984. Endangered and threatened wildlife and plants; Determination of endangered species status for seven birds and two bats of Guam and the Northern Mariana Islands. *Federal Register* 49:33881-33885.
- _____. 1991a. Recovery plan for the Mariana common moorhen (= Gallinule) (*Gallinula chloropus guami*). Portland, Oregon. 55 pp.
- _____. 1991b. Recovery plan for the Mariana Islands population of the Vanikoro swiftlet, *Aerodramus vanikorensis bartschi*. Portland, Oregon. 49 pp.
- _____. 1996. Characteristics of Mariana common moorhens and wetland habitats within the U.S. Department of the Navy's military lease area and exclusive military use area on the island of Tinian, Commonwealth of the Northern Mariana Islands, July 1994 – August 1995. 26 pp. + Appendix.
- _____. 2008. Island-wide surveys on Saipan. Unpublished data.
- _____. 2009. Five-year review short form summary and evaluation for the Mariana common moorhen (= Gallinule) (*Gallinula chloropus guami*). Pacific Islands Fish and Wildlife Office, Honolulu, HI.
- _____. 2010. Five-year review summary and evaluation for the Mariana swiftlet or Chachaguak (*Aerodramas bartschi*). Pacific Islands Fish and Wildlife Office, Honolulu, HI.
- Vogt, S. and L. Williams. 2004. Common flora and fauna of the Mariana Islands. 158 pp.
- Ward, D. H., R. A. Stehn, W. P. Erickson, and D. V. Derksen. 1999. Response of fall-staging brant and Canada geese to aircraft overflights in southwestern Alaska. *Journal of Wildlife Management* 63:373-381.

Wiles, G.J. and D.H. Woodside. 1999. History and population status of Guam swiftlets on Oahu, Hawaii. *Elepaio* 59(7):57-61.

Wusstig, S. 2009. Electronic mail dated May 6, 2009 through May 13, 2009, regarding nesting and movement of green sea turtles detected on or near Guam.

THIS PAGE INTENTIONALLY LEFT BLANK

**Formal Consultation for Divert Activities and Exercises at the Saipan International Airport,
Commonwealth of the Northern Mariana Islands**

August 20, 2013

Subject: Corrections made to Divert Biological Opinion (2012-F-0445) after signing

1. Page 11 (Brown Treesnake Interdiction and Control), paragraph 1, 1st sentence: Reference to "Public Law 110-417, [Division A], title III, Section 316, October 14,2008, 122 Statute 4410" should instead read "122 Statute 4356."
2. Page 11 (Brown Treesnake Interdiction and Control), paragraph 1, 2nd sentence: This text refers to JRM Instruction 5090.4 which is a draft instruction at this time. The applicable instructions are COMNAVMARIANASINST 5090.10A and 36 Wing Instruction 32-7004.
3. Page 13 cites a DOD Instruction 5090.10A. This should instead read COMNAVMARIANASINST 5090.10A.

THIS PAGE INTENTIONALLY LEFT BLANK

**USAF Letter to USFWS Requesting Concurrence with the Not Likely to
Adversely to Affect Determination for Nesting Green and Hawksbill Sea Turtles,
July 8, 2015**



**DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES**

July 8, 2015

MEMORANDUM FOR U.S. FISH AND WILDLIFE SERVICE

Pacific Islands Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, HI 96850
ATTN: Ms. Kristi Young

FROM: AFCEC/CFPE
25 E ST, STE C-200
JBPH-H, HI 96853-5420

SUBJECT: Request for Concurrence that Developing Divert Capabilities and Conducting Divert Activities and Exercises on Tinian May Affect, but is Not Likely to Adversely Affect Nesting Green and Hawksbill Sea Turtles

1. The U.S. Air Force (USAF) is proposing to develop divert capabilities and conduct activities and exercises at one or more commercial airports in the Commonwealth of the Northern Mariana Islands (CNMI). In June 2013, the USAF and U.S. Fish and Wildlife Service (USFWS) completed formal consultation on a proposal to develop facilities and conduct divert activities and exercises at Saipan International Airport. The USAF is now considering modifying those plans to develop divert capabilities on Tinian, CNMI, and conduct some or all activities and exercises on that island.

2. To comply with Section 7(a)(2) of the Endangered Species Act, the USAF has analyzed the potential effects of the proposed action on species classified or proposed for listing as threatened or endangered. The attached memo summarizes the conclusions of that analysis that planned activities on Tinian, including at Tinian International Airport, may affect, but are not likely to adversely affect, nesting green and hawksbill sea turtles, and would not affect any other species classified as endangered, threatened, or proposed under the Endangered Species Act. There is no designated or proposed critical habitat on Tinian.

3. In accordance with 50 CFR 402.13, the USAF requests concurrence from the USFWS that developing divert capabilities and implementing divert activities and exercises on Tinian may affect, but is not likely to adversely affect, nesting green and hawksbill sea turtles.

4. If you have any questions or require additional information, please contact me at (808) 449-4049 or william.grannis@us.af.mil.



WILLIAM GRANNIS, GS-13, DAF
Environmental Program Manager
Facilities Engineering Center of Excellence
Air Force Civil Engineer Center

Attachment:

Assessment of Potential Effects to Threatened, Endangered, and Proposed Species from
Developing Divert Capabilities and Conducting Activities and Exercises on Tinian, 08 July,
2015

**Assessment of Potential Effects to Threatened, Endangered, and
Proposed Species from Developing Divert Capabilities and Conducting
Activities and Exercises on Tinian**

The U.S. Air Force (USAF) is proposing to improve the existing commercial airports at Saipan International Airport (GSN) and Tinian International Airport (TNI) and conduct from those airports periodic divert landings, joint military exercises, and humanitarian assistance and disaster relief efforts. A *Draft Environmental Impact Statement (EIS) for Divert Activities and Exercises, Guam and Commonwealth of the Northern Mariana Islands* (USAF 2012) has been prepared, and consultation as required by Section 7 of the Endangered Species Act (ESA) was completed for proposed activities on Saipan (USFWS 2013).

Since completion of the Draft EIS and Section 7 consultation for activities on Saipan, the USAF has evaluated public, agency, and stakeholder comments as part of the National Environmental Policy Act process and revised their proposed plans, resulting in modified versions of the alternatives presented in the Draft EIS. The USAF is now considering developing infrastructure to support parking of up to nine KC-135 or similar large-bodied aircraft at GSN; or up to 12 KC-135 or similar aircraft at TNI; or a combination of up to 12 KC-135 or similar aircraft between both airports (e.g., 7 to 10 aircraft at TNI and 2 to 5 aircraft at GSN). The USAF would typically exercise two to four of those KC-135 or similar aircraft, but not fighter aircraft, from one or both airfields for up to eight weeks per year.

This assessment summarizes the USAF conclusions about the potential effects that developing divert capabilities on TNI and conducting activities there would have on species that occur on Tinian that are classified under the ESA as endangered, threatened, or proposed.

Proposed Activities on Tinian

The USAF proposes to construct some or all of the following facilities and improvements at TNI: a parking apron; taxiways; cargo pad; maintenance facility; and a fuel storage, hydrant, and delivery system. As shown in **Figure 1**, these facilities would be developed on either the north or south side of the TNI runway, but not both. A bulk fuel storage facility also might be developed at the Tinian Seaport, and fuel would be transported by truck to the airport. If deemed feasible in the future after appropriate analysis is conducted and suitable agreements are developed with CNMI authorities, PACAF might develop a fuel pipeline from the seaport to the airport.

Areas at and surrounding TNI and the Tinian Seaport, where facilities would be developed and divert activities and exercises would occur, contain no original native vegetation and consist of developed land, mowed fields, and areas vegetated with mixed herbaceous scrub and second-growth introduced forests dominated by *Leucaena leucocephala* and *Casuarina equisetifolia* (Amidon 2009; USAF 2012, Section 4.6.2; NAVFAC 2015 b, Section 3.9.4.1). Native limestone forests on Tinian are restricted to areas along and below cliffs, and those forests do not occur within or near TNI or the seaport.

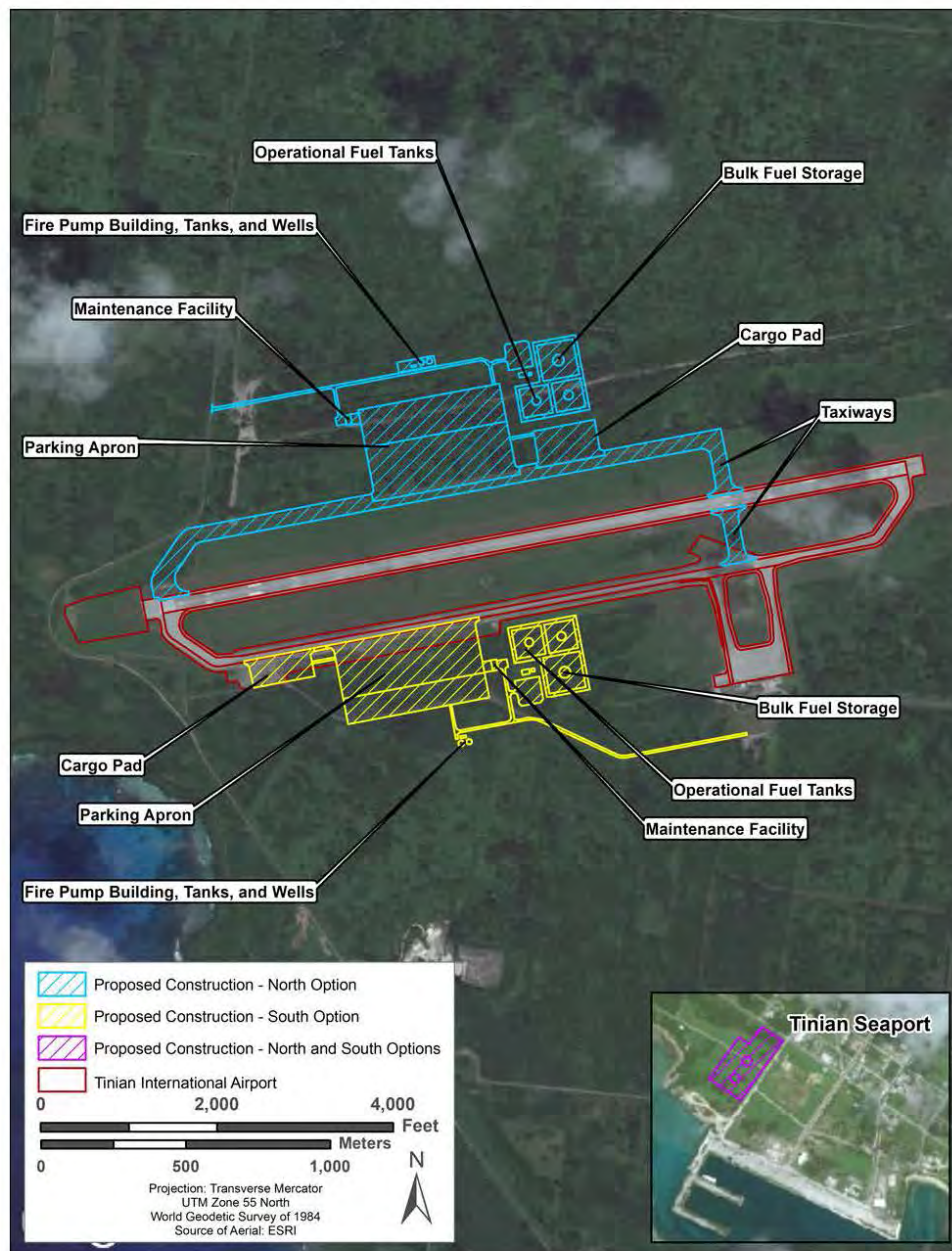


Figure 1. Location of Proposed Facilities at TNI.

The capacity for military aircraft at TNI would be up to 12 KC-135 tankers or similar wide-bodied aircraft. Typical exercises at that airfield would include two to four wide-bodied aircraft for up to eight weeks per year. Those aircraft would take off and land between 2 and 4 times per day (for a total of four to eight operations per day) and usually would fly five days per week for up to eight weeks per year. Aircraft would operate out of Saipan or Tinian, or a combination of both airfields. If both airfields were developed and used, about two-thirds of the aircraft operations would occur on Tinian. Temporary billeting would be required on both Saipan and Tinian for up to 265 personnel supporting aircraft operations and would be procured on the local economy.

The Draft EIS (USAF 2012) presents predicted sound levels from the operation of military aircraft on Saipan and Tinian during an “average busy day” for three proposed levels of operation. For the Tinian low operations scenario, the calculation was based on operation of 12 KC-135s from TNI for a total of 1,920 operations over eight weeks per year (five days per week), or about 48 KC-135 operations per average busy day, plus the predicted future level of commercial and private aircraft operations at that airport. For that scenario, the contour for 65 A-weighted decibels (dBA) is predicted to extend west past the end of the TNI runway to the coast (**Figure 2**).

Since publication of the Draft EIS, the USAF has adjusted the level of proposed activities and now plans to conduct about 720 or fewer KC-135 operations from TNI over eight weeks per year, or about 18 KC-135 operations on an average busy day. This is about one-third of the number of operations used to predict the sound levels on TNI in **Figure 2**. Thus, average sound levels would be substantially lower than those shown in **Figure 2**.

The methods and procedures that the USAF would implement to interdict and control brown tree snakes and other invasive species while conducting this project are the same as described in the *Biological Opinion for the U.S. Air Force’s Divert Activities and Exercises at GSN* (USFWS 2013, pp. 10-14). Implementation of that biosecurity program will prevent adverse effects to listed species, and other native wildlife, from introduction of non-native species.

Potential Effects to Threatened and Endangered Species

The U.S. Fish and Wildlife Service (2015) Environmental Conservation Online System lists six threatened or endangered species that occur or could occur on Tinian. Of these, the Mariana swiftlet (*Aerodramus bartschi*) and nightingale reed-warbler (*Acrocephalus luscini*) are no longer found on the island (USFWS 1998b, Cruz et al. 2008, USFWS 2010a). In addition, at least one nest of a hawksbill sea turtle (*Eretmochelys imbricata*) has been found on Tinian. The species analyzed here thus include the Mariana fruit bat (*Pteropus mariannus mariannus*), Mariana common moorhen (*Gallinula chloropus guami*), Micronesian megapode (*Megapodius laperouse*), and green (*Chelonia mydas*) and hawksbill turtles (**Table 1**). There is no designated or proposed critical habitat on Tinian.

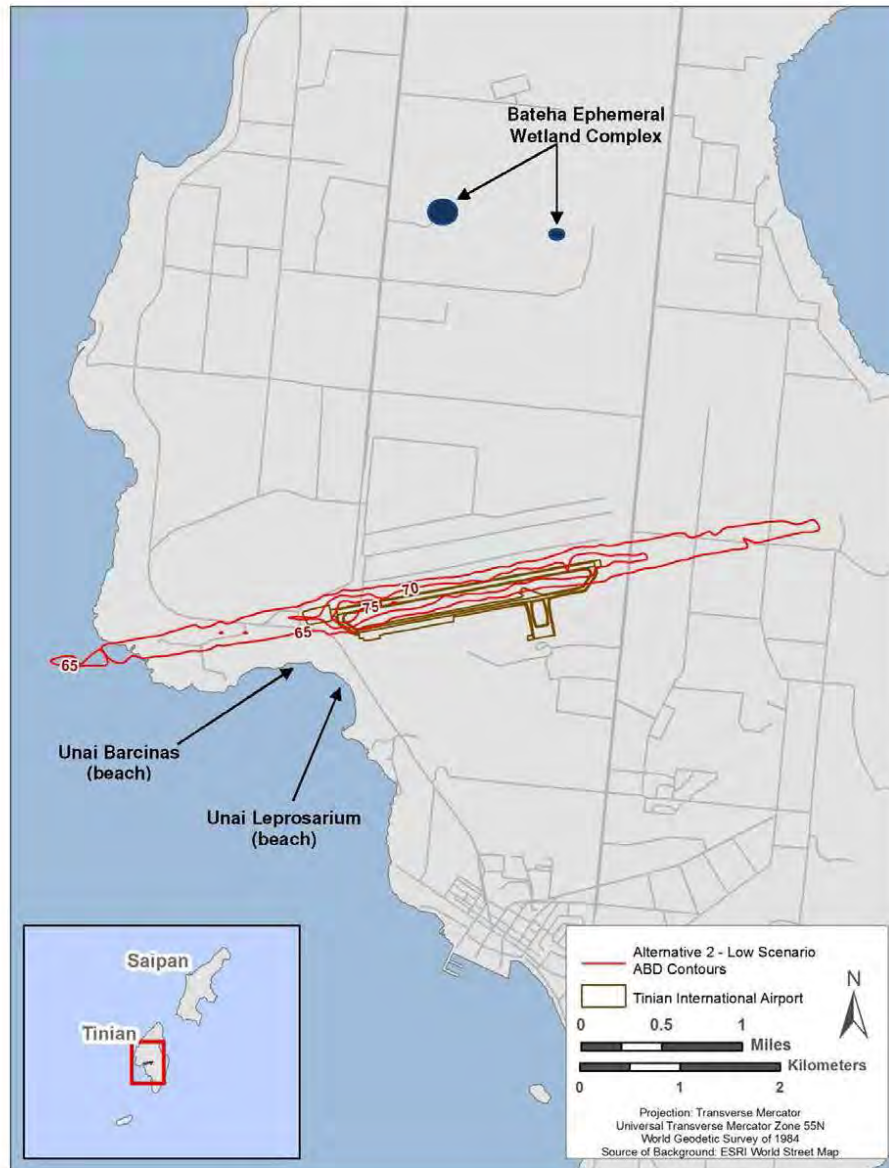


Figure 2. Noise Contours (dBA day-night level) during an average busy day at TNI for 48 KC-135 operations per day

Table 1. Threatened and Endangered Species in the Commonwealth of the Northern Marianas

Species	Scientific Name	Status	Occurrence on Tinian
Mariana fruit bat	<i>Pteropus mariannus mariannus</i>	T	Extirpated (USFWS 2014)
Mariana common moorhen	<i>Gallinula chloropus guami</i>	E	Occurs on Lake Hagoi and seasonal wetlands (Takano and Haig 2004)
Micronesian megapode	<i>Megapodius laperouse</i>	E	Rare or absent from Tinian (USFWS 1998a, 2010b)
Green sea turtle	<i>Chelonia mydas</i>	T	Nests on Tinian (Pultz et al. 1999; Kolinski et al. 2001)
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>	E	At least one nesting effort documented on Tinian (NAVFAC 2015b)

Source: USFWS 2015; T = Threatened, E = Endangered

Mariana Fruit Bat. Mariana fruit bats have rarely been seen on Tinian within the past 30 years (Brooke 2009, USFWS 2009) and now appear to be extirpated from that island (USFWS 2014) or occur there only incidentally. Surveys in 1994 and 1995 did not observe Mariana fruit bats; however, two incidental sightings were reported from other locations on Tinian (Brooke 2009). No fruit bats were sighted on Tinian during surveys in 2000 (Cruz et al. 2000). In June 2005, approximately five Mariana fruit bats were seen in the cliff-line forest during a routine forest bird survey of the Maga bird transect (Brooke 2009). During February through August 2008, eight separate station counts were conducted at seven locations on Tinian; no fruit bats were observed during station counts or opportunistically (Brooke 2009). Although suitable fruit bat habitat does occur on Tinian, the continued observations of very few fruit bats, and the likelihood that individuals observed on Tinian are not residents, indicate that the Mariana fruit bat currently occurs only incidentally on Tinian. Mariana fruit bats, therefore, would not be affected by proposed activities on Tinian.

Micronesian megapode. Micronesian megapodes have been seen very infrequently on Tinian in recent years (USFWS 1998a, Kessler and Amidon 2009). None were detected during an extensive survey of potential habitat in 2008 (Kessler and Amidon 2009) and 2013 (NAVFAC 2014a), and they either have been extirpated from that island (USFWS 2010b) or occur there only incidentally. In the past, megapodes have been found on Tinian primarily within and near limestone forests in the Maga and Mt. Laso areas (USFWS 1998a, Kessler and Amidon 2009, NAVFAC 2013a). No construction or other project activities would occur in or near any potential habitat for this species, and sound levels in that potential habitat would not increase due to project construction or aircraft operations. Thus, Micronesian megapodes would not be affected by proposed activities on Tinian.

Mariana Common Moorhen. There are no wetlands within or near areas that would be disturbed for construction of facilities at TNI and no wetlands occur within one mile of the flight path to that airport (NAVFAC 2015a). The closest wetlands to TNI that are used by Mariana common moorhens are the Bateha (**Figure 2**) and Mahalang wetland complexes (NAVFAC

2014a), located about 1.5 to 3 miles north of TNI (**Figure 2**). Moorhens also occur on perennial Lake Hagoi, located about 4 miles north of TNI (Takano and Haig 2004, NAVFAC 2014a).

Average daily sound levels at wetlands on Tinian used by moorhens would not increase due to project construction or aircraft operations. **Figure 2** shows noise contours for an “average busy day”, based on the operation of 12 KC-135 aircraft taking off and landing twice per day, plus the cumulative effects of predicted commercial and private operations at TNI. The USAF now plans to operate 2 to 4 such aircraft from Tinian during most or all exercises, and average sound levels would be lower than shown in **Figure 2**. Peak noise levels at those wetlands also would not be high, as those aircraft will not fly over or near the wetlands during takeoffs and landings. Thus, Mariana common moorhens would not be affected by proposed activities on Tinian.

Green and Hawksbill Sea Turtles. Green and hawksbill turtles forage offshore of Tinian (Pultz et al. 1999; Kolinski et al. 2001; Maison et al. 2010) and there is a small population of green sea turtles that nest on most or all beaches on Tinian (Pultz et al. 1999, NAVFAC 2014b). One hawksbill nest was documented on the northeastern shore of Tinian (more than 2 miles from TNI) during monthly surveys of beaches conducted during 1999-2012 (NAVFAC 2015b, Table 3.9-3), and nesting by this species on Tinian is uncommon (Pultz et al. 1999; NAVFAC 2014b, 2015b).

No construction would occur on or near nesting beaches or marine habitat of these species. Department of Defense policies, compliant with Federal and CNMI regulations, will be followed to minimize erosion and sedimentation during construction and to manage storm water runoff after construction. By implementing those policies, adverse impacts of sedimentation and runoff would be negligible. Thus, sea turtle nesting and foraging habitat would not be adversely affected by development of facilities at TNI or the Tinian port or by implementation of divert activities or exercises, and the project would have no effect on sea turtles in the marine environment.

Average sound levels on the western coast of Tinian might be slightly higher directly under the flight path of TNI during divert operations and exercises (**Figure 2**). That section of the coast is steep and rocky and has no or very little beach habitat for nesting. The nearest beaches that are commonly used by green sea turtles for nesting are Unai Barcinas and Unai Leprosarium (DON 2010, Section 3.8.2.2.1), located 0.3 to 0.8 miles south to southwest of the TNI runway (**Figure 2**). Those beaches are outside of the 65 dBA DNL noise contours for an average busy day for operation of 12 KC-135 aircraft, and noise contours would be smaller for planned operation of 2 to 4 aircraft per day at TNI. However, during takeoffs and landings of military aircraft, sea turtles nesting on those beaches, and hatchling turtles moving from nests to the ocean, could be temporarily exposed to noise from military aircraft taking off and landing at TNI. Although aircraft with sound emissions similar to a KC-135 occasionally fly into and out of TNI, that level of sound would occur more frequently during exercises and operations than currently experienced. Exposure to elevated noise levels would be brief (seconds) and, with the exception of emergency divert landings and associated take-offs, usually would occur over a period of no more than about eight weeks of the year. Thus, any avoidance response or other change in behavior would be short-term and would not permanently displace sea turtles. Noise from take-offs and landing would not result in chronic stress because military aircraft operations would occur infrequently, sea turtles nest infrequently, and thus those turtles would not be

repeatedly exposed to low-altitude overflights. **Because effects would be insignificant and would not be sufficient to harm or harass sea turtles, developing divert capabilities and conducting divert activities and exercises at TNI may affect, but is not likely to adversely affect, green or hawksbill sea turtles in terrestrial environments.**

Potential Effects to Proposed Species

In October 2014, the USFWS proposed to list 23 plant and animal species from the Mariana Islands as threatened or endangered (79 FR 59364–59413). In response to a request from the USAF, the USFWS identified three of those species that could occur near TNI: a tree (*Heritiera longipetiolata*), an orchid (*Dendrobium guamense*), and the humped tree snail (*Partula gihba*) (letter from R. Rounds, USFWS, to W. Grannis, AFCEC, 22 January 2015).

***Heritiera longipetiolata*.** This tree is endemic to the Mariana Islands and historically was found in forests on Guam, Rota, Saipan, and Tinian. *H. longipetiolata* occurs in moist forests on limestone cliffs and in coastal sites with windy conditions (NAVFAC 2015b, Appendix L1: 79 FR 59378). On Tinian it has been found near Unai Masalok on the eastern coast, along the Lamanibot Bay escarpment on the northwestern coast, and along the southeastern coast between Puntan Barangka and Puntan Kastiyu. There were fewer than 10 individuals known on Tinian during or before 2013 (79 FR 59378). No stands of native forest where this species could occur would be disturbed. Development of divert capabilities at TNI therefore will not affect *H. longipetiolata*.

***Dendrobium guamense*.** This orchid is known from forests of Guam, Rota, Saipan, and Tinian. There is only one reported occurrence on Tinian (79 FR 59378), over 1.8 miles from TNI (NAVFAC 2014a). No stands of native forest where this species could occur will be disturbed. Development of divert capabilities at TNI therefore will not affect *D. guamense*.

Humped Tree Snail. The humped tree snail is endemic to the Mariana Islands and is found in cool, shaded forests. Live humped tree snails were found in native limestone forest adjacent to Lamanibot Bay on the northwestern coast of Tinian during extensive surveys of potential habitat on the island in 2013 (NAVFAC 2014a). That site is about 2.8 miles from TNI. Old shells, but no live snails, were found in other stands of native limestone forest, the closest of which was near the eastern shore of Tinian about 1.8 miles from TNI. No stands of native forest where this species could occur will be disturbed. Therefore, development of divert capabilities at TNI will not affect the humped tree snail.

References

- Amidon 2009 Amidon, F. 2009. Vegetation Surveys of Tinian and Aguiguan. Pages 8 to 18 *in* Terrestrial Resource Surveys of Tinian and Aguiguan, Mariana Islands, 2009. U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, HI.
- Brooke 2009 Brooke, A. 2009. Mariana Fruit Bat on Tinian and Aguiguan. . Pages 269 to 272 *in* Terrestrial Resource Surveys of Tinian and Aguiguan, Mariana Islands, 2009. U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, HI.
- Cruz et al. 2000 Cruz, J., L. Arriola, N. Johnson, and G. Beauprez. 2000. Wildlife and Vegetation Surveys in the Tinian Proposed Conservation Areas. Technical Report #1. CNMI Division of Fish and Wildlife, Lower Base, Saipan and Tinian Department of Lands and Natural Resources, Fish and Wildlife Conservation Sections, San Jose, Tinian.
- Cruz et al. 2008 Cruz, J.B., S.R. Kremer, G. Martin, L.L. Williams, and V.A. Camacho. 2008. Relative abundance and distribution of Mariana swiftlets (Aves: Apodidae) in the northern Mariana Islands. *Pacific Science* 62:233-246.
- DON 2010 Department of the Navy (DON). 2010. *Mariana Islands Range Complex (MIRC) Environmental Impact Statement (EIS)*. July 2010.
- Kessler and Amidon 2009 Kessler, C., and F. A. Amidon 2009. Micronesian Megapode on Tinian and Aguiguan. Pages 201 to 218 *in* Terrestrial Resource Surveys of Tinian and Aguiguan, Mariana Islands, 2009. U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, HI.
- Kolinski et al. 2001 Kolinski, S.P., D.M. Parker, L.I. Ilo, and J.K. Ruak. 2001. An assessment of the sea turtles and their marine and terrestrial habitats at Saipan, Commonwealth of the Northern Mariana Islands. *Micronesica* 34:55-72.
- Maison et al 2010 Maison, K.A., K.I. Kinain, and K.P. Frutchey. 2010. Green turtle nesting sites and sea turtle legislation throughout Oceania. U.S. National Oceanic and Atmospheric Administration Memorandum NMFS-F/SPO-110.
- NAVFAC 2014a Naval Facilities Engineering Command, Pacific (NAVFAC). 2014. Terrestrial Biological Surveys on Tinian in Support of the Commonwealth of the Northern Mariana Islands Joint Military Training Environmental Impact Statement/Overseas Environmental Impact Statement. Department of the Navy, Naval Facilities Engineering Command, Pacific. Hawaii.

NAVFAC 2014b	NAVFAC. 2014. Sea Turtle Marine Resources Survey Report in Support of the Commonwealth of the Northern Mariana Islands Joint Military Training Environmental Impact Statement/Overseas Environmental Impact Statement. Department of the Navy, Naval Facilities Engineering Command, Pacific, Hawaii.
NAVFAC 2015a	NAVFAC. 2015. Surveys of Potential Wetland Sites on Tinian in Support of the Commonwealth of the Northern Mariana Islands Joint Military Training Environmental Impact Statement/Overseas Environmental Impact Statement. Department of the Navy, Naval Facilities Engineering Command, Pacific, Hawaii.
NAVFAC 2015b	NAVFAC. 2015. Draft Commonwealth of the Northern Mariana Islands Joint Military Training Environmental Impact Statement/Overseas Environmental Impact Statement. Department of the Navy, Naval Facilities Engineering Command, Pacific, Hawaii.
Pultz et al. 1999	Pultz, S., D. O'Daniel, S. Krueger, and H. McSharry. 1999. Marine turtle survey on Tinian, Mariana Islands. <i>Micronesica</i> 31:83-94.
Takano and Haig 2004	Takano, L.L., and S.M. Haig. 2004. Distribution and abundance of the Mariana subspecies of the common moorhen. <i>Waterbirds</i> 27:245-250.
USAF 2012	U.S. Air Force (USAF). 2012. Draft Environmental Impact Statement for proposed Divert Activities and Exercises, Guam and Commonwealth of the Northern Mariana Islands (CNMI). Pacific Air Forces, Joint Base Pearl Harbor-Hickam, Hawaii.
USFWS 1998a	USFWS 1998. Recovery Plan for the Micronesian Megapode (<i>Megapodius laperouse laperouse</i>). Portland, Oregon.
USFWS 1998b	USFWS 1998. Recovery Plan for the Nightingale Reed-Warbler (<i>Acrocephalus luscini</i>). Portland, Oregon.
USFWS 2007b	USFWS 2007. Recovery Plan for Two Plants from Rota (<i>Nesogenes roten</i> and <i>Osmoxylon mariannense</i>). Portland, Oregon.
USFWS 2009	USFWS 2009. Draft Revised Recovery Plan for the Mariana Fruit Bat or Fanahi (<i>Pteropus mariannus mariannus</i>). Portland, Oregon.
USFWS 2010a	USFWS 2010. Mariana Swiftlet or Chachaguak (<i>Aerodramus bartschi</i>) 5-Year Review Summary and Evaluation. Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii.
USFWS 2010b	USFWS 2010. Micronesian megapode (<i>Megapodius laperouse</i>) 5-Year Review Summary and Evaluation. Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii.

- USFWS 2013 USFWS. 2013. Formal Consultation for Divert Activities and Exercises at the Saipan International Airport, Commonwealth of the Northern Mariana Islands. USFWS Pacific Islands Fish and Wildlife Office. Honolulu, Hawaii.
- USFWS 2014 USFWS. 2014. 5-Year Review Short Form Summary–*Pteropus mariannus mariannus* (Mariana fruit bat). USFWS Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii.
- USFWS 2015. USFWS. 2015. Species by County Report–Tinian. . USFWS Environmental Conservation Online System. <http://ecos.fws.gov/ecos/home.action>. Accessed June 2, 2015

**USFWS Letter to USAF Concurring with the Not Likely to Adversely to Affect Determination for
Nesting Green and Hawksbill Sea Turtles, and that the Modified Saipan Alternative is Within
Scope of the 2012 Divert BO
October 30, 2015**



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



OCT 30 2015

In Reply Refer To:
01EPIF00-2012-F-0445
01EPIF00-2015-I-0364

Mr. William Grannis
Environmental Program Manager
Facilities Engineering Center of Excellence
Air Force Civil Engineer Center
25 E Street, Suite C-200
Joint Base Pearl Harbor-Hickam, Hawaii 96853-5420

Subject: Amendment to the Biological Opinion for Development of Divert Capabilities
and Conducting Divert Activities and Exercises, Saipan and Tinian,
Commonwealth of the Northern Mariana Islands (01EPIF00-2012-F-0445)

Dear Mr. Grannis:

This letter acknowledges the U.S. Fish and Wildlife Service's (Service) receipt of your July 8, 2015, letter requesting our concurrence with your determination that extending aircraft Divert capabilities and conducting Divert activities and exercises on Tinian, Commonwealth of the Northern Mariana Islands (CNMI), is not likely to adversely affect the threatened green turtle (*Chelonia mydas*) and the endangered hawksbill sea turtle (*Eretmochelys imbricata*) pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). You met with us on August 21, 2015 and you provided us with additional information about the project via email on September 14, 2015, by phone on September 22, 2015, and via email on October 6, 2015. On June 27, 2013, we completed a Biological Opinion addressing Divert activities at Saipan International Airport (Divert Biological Opinion; 01EPIF00-2012-F-0445) to satisfy operational requirements for humanitarian assistance, disaster response, and joint exercises in the Pacific in the event that airfield access at Andersen Air Force Base or other western Pacific airfields is limited. The revised proposed action modifies the Divert project to move some or all Divert capabilities and activities to Tinian International Airport.

The Divert Biological Opinion addressed potential adverse project effects to the endangered nightingale reed-warbler (*Acrocephalus luscini*) and we concurred with the Department of the Air Force's determination the proposed actions on Saipan were not likely to adversely affect the endangered Mariana common moorhen (*Gallinula chloropus guami*), Mariana swiftlet (*Aerodramus bartschi*), and the green turtle. Your September 14, 2015, email, attached herein as Appendix 1, details modifications to the Divert project on Saipan. The extent of Divert construction at Saipan International Airport and Seaport has been reduced and fighter aircraft have been removed from the proposed action on Saipan. Construction disturbance on Saipan has been reduced from the 59 acres addressed in the Divert Biological Opinion to 31 acres. Fewer than 6.6 acres of tangantangan, habitat for the nightingale reed-warbler, will be cleared, down

from the 11 acres addressed in the Divert Biological Opinion. The Divert Biological Opinion addressed the loss, fragmentation, and degradation of one occupied nightingale reed-warbler territory due to construction of the east parking ramp and the purchase of one credit in the Saipan Upland Mitigation Bank to compensate for the loss of that breeding territory. The Divert Biological Opinion also addressed the habitat loss and degradation of 17 occupied nightingale reed-warbler breeding territories due to fighter aircraft noise disturbance and compensatory mitigation in the form of purchase of 17 credits in the Saipan Upland Mitigation Bank. Because the updated action does not entail construction of the east parking ramp or loss or degradation of any other habitat occupied by the nightingale reed-warbler from the fighter aircraft, the action no longer entails purchase of credits in the Saipan Upland Mitigation Bank.

All other components of the proposed action on Saipan, as detailed in Appendix 1, remain the same as described in the Divert Biological Opinion. Accordingly, these modifications to Divert actions on Saipan do not warrant reinitiation of formal consultation because the effects of the remaining, reduced, actions were addressed in the Divert Biological Opinion. The remaining proposed Divert actions on Saipan will be conducted in conformance with the Divert Biological Opinion, and the effects of those actions will be consistent with the analysis in that Biological Opinion. The Incidental Take Statement, Reasonable and Prudent Measures, Terms and Conditions, and Conservation Recommendations in the Divert Biological Opinion remain in effect. We are providing this Amendment to the Divert Biological Opinion to document these modifications to proposed Divert actions on Saipan and to address effects of new proposed Divert actions on Tinian.

REVISED PROJECT DESCRIPTION - TINIAN

Construction Activities on Tinian

The Divert project will entail development of infrastructure to support up to 12 KC-135 or similar large-bodied aircraft, or a mix of these large aircraft and up to 24 smaller fighter or tactical aircraft, at Tinian International Airport. Figure 1 details the proposed construction of runway, cargo, parking, fueling, and maintenance facilities within and adjacent to existing facilities at Tinian International Airport. No wetlands or limestone forest are within or adjacent to the proposed construction areas. To minimize potential impacts to turtle nesting beaches, Department of Defense policies, will be followed to minimize erosion and sedimentation during construction and to manage storm water runoff after construction.

Page 1 of “Assessment of Potential Effects to Threatened, Endangered, and Proposed Species from Developing Divert Capabilities and Conducting Activities and Exercises on Tinian” (Assessment) indicates a fuel pipeline from the Tinian Seaport to the airport may be constructed. On September 22, 2015, you confirmed this fuel pipeline had been removed from the Divert project.

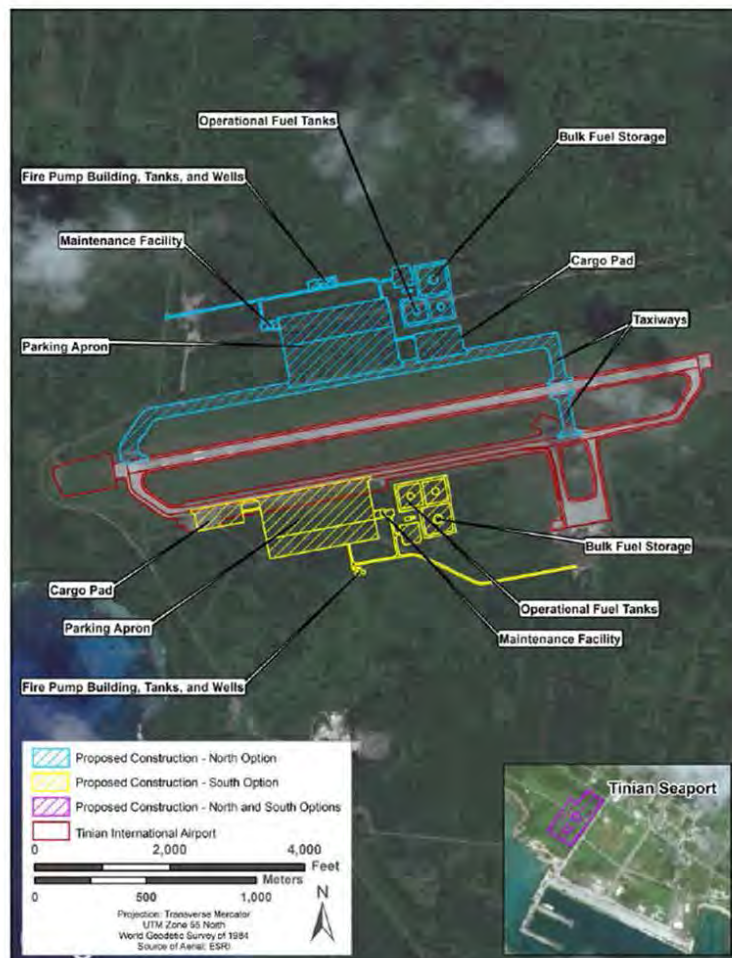


Figure 1. Construction footprint at Tinian Airport.

Divert Operations on Tinian

Divert aircraft training and operations will occur at Tinian Airfield when other locations in the western Pacific, such as Andersen AFB, are unavailable, due to emergencies such as natural disasters and for other operational reasons for a period of up to eight weeks per year. In limited instances such as disasters and humanitarian responses, operations may extend beyond the eight week per year time period. A mix of cargo, tanker, fighter, and other aircraft could be diverted to the Tinian airfield. Activities will include aircraft take-offs, staging, and landings, jet fueling and storage, humanitarian assistance including disaster relief airlift staging including non-combatant evacuation operations and billeting. Personnel and members of the public

accompanying the aircraft on Tinian could number up to 265 during Divert training and operations. These people will be billeted in existing hotel and other accommodations.

Biosecurity Measures to be Implemented During Divert Construction and Operations on Tinian

Invasive Species Interdiction and Control

The U.S. Air Force (USAF) will be responsible for oversight of avoidance, minimization, and mitigation implementation by the construction contractors for projects associated with the proposed Divert activities. In addition, the USAF will be responsible for oversight of training, review, and guidance on Hazard Analysis and Critical Control Point (HACCP) plan development, implementation and revision during the construction phase of the project. The HACCP plans will incorporate measures to ensure invasive species, including the brown treesnake, are not transported to the CNMI from Guam via project vehicles, materials and equipment. The USAF will be responsible for assuring that any HACCP plans are implemented by construction contractors to prevent the inadvertent movement of non-native, invasive species from other locations to the project site. The USAF will coordinate development of HACCP plans with the Service, including, but not limited to, annual meetings and reports to ensure the actions to eliminate or reduce risk are sufficient and on-going during construction activities.

Brown Treesnake Interdiction and Control

1. Per Public Law 110-417, [Division A], title III, Section 316, October 14, 2008, 122 Statute 4356 and per DoD Defense Transportation Regulations, Chapter 505 protocols, the USAF, with support from Joint Region Marianas (JRM), commits to implementing 100 percent inspection of all outgoing cargo and aircraft that are leaving from Guam associated with the Divert project. Inspections will be performed with trained quarantine officers and dog detection teams, which could be supplemented by other pest control expertise (with appropriate U.S. Department of Agriculture-Wildlife Services (USDA-WS) brown treesnake detection training and oversight) to meet 100 percent inspection goals for training activities, as required COMNAVMARIANASINST 5090.10A and 36 Wing Instruction 32-7004. As a stakeholder, the Service will have input on the USAF protocols for implementing brown treesnake interdiction and control strategies. The USAF will work cooperatively with JRM, the Service, and USDA-WS to seek information in development of protocols for implementation of interdiction and control methods aimed at controlling brown treesnake as related to Divert training activities. On an as needed basis, the Service, USDA-WS, and USAF may request meetings to discuss interdiction and control method protocols as related to Divert military exercises.
 - a. In the event military units, vehicles, and equipment accidentally leave Guam without inspection, as soon as possible, the USAF will notify: (1) USDA-WS and (2) the point of destination port or airport authorities and work with the destination port to resolve the issue. Urgency of notification is a priority so that rapid response or other actions can be implemented to reduce risk.
 - b. In addition, the USAF will route inbound personnel and cargo for tactical approach exercises or humanitarian operations (that require an uninterrupted flow of events) directly to CNMI training locations to avoid Guam seaports and airfields. If Guam cannot

be avoided, the USAF, in cooperation with USDA-WS and the Service, shall identify, and USAF will implement appropriate interdiction methods that may include redundant inspections or other interdiction methods as agreed to by the Service, USDA-WS, USAF and JRM. Additionally, tactical approach exercises will involve only cargo equipment that has not originated from areas containing a brown treesnake population or will be 100 percent inspected by certified brown treesnake canine programs. If the USDA-WS develops performance standards for this activity, the USAF will adopt those standards, provided they are compatible with military mission.

- c. The USAF is committed to implementing 100% redundant inspections after discussions with appropriate stakeholders. Redundant inspections include inspections on Guam and at the receiving jurisdiction for administrative and logistical movements that do not require a tactical approach to complete the training requirements. It is anticipated that redundant inspections to the extent possible would utilize existing quarantine and inspection protocols at receiving ports, but in the event that there is inadequate inspection coverage the USAF will coordinate with the USDA-WS to provide additional canine inspection teams that will augment quarantine and inspection protocols at the receiving ports. Appropriate stakeholders include, but are not limited to: the Service to ensure the inspections are adequate to reduce risks to trust resources, USDA-WS, receiving jurisdictions and their supporting agencies with expertise in invasive species control, and other inspection authorities as needed to ensure inspection methods are current and revised as new techniques, technology, or data become available.
2. The USAF will also establish snake-free quarantine areas (barriers) for cargo traveling from Guam to CNMI and other brown treesnake-free areas. These barriers will be subject to: (1) multiple day and night searches with appropriately trained interdiction canine teams that meet performance standards under 1b; (2) snake trapping; and (3) visual inspection for snakes. In lieu of permanent barriers, temporary barriers may be preferable to permanent enclosures because of the variable sizes needed to handle different cargo amounts for the various training activities. The USAF will produce standard operating procedures for temporary barrier construction and use within two years of the issuance of this Biological Opinion. Standard operating procedures will ensure that temporary barriers will be constructed and maintained in a manner that assures the efficacy of the barrier and that staff maintaining and constructing the temporary barriers will receive training related to this activity prior to construction. The construction and maintenance of temporary barriers utilized for cargo traveling from Guam to CNMI and other brown treesnake-free areas must be approved by the Service prior to use. During the construction phase of this project, the existing permanent snake-free quarantine areas at both the Saipan and Tinian seaports should be utilized for surface cargo following relevant CNM I and DoD regulations. Standard operating procedures will be developed in cooperation with the Service, U.S. Geological Survey, Fort Collins Science Center, Invasive Species Science Branch, and the USDA-WS to ensure risk to trust resources is adequately minimized. If risks are not adequately minimized, additional recommendations will be provided for incorporation into the protocols until the USAF and Service mutually agree the risk has been minimized. The Service, USAF, and other appropriate parties will meet, if necessary, to resolve concerns such that the protocols ensure risk is adequately minimized.
3. The USAF, in conjunction with the Service and JRM, will develop procedures and protocols

specific to Divert training events that will support a rapid response action in the event of a brown treesnake sighting resulting from Divert activities. Divert activities and exercises will be varied in the number of aircraft and personnel, and each event will have differing logistics support capabilities depending on the nature of the event. The type and amount of logistic support will be agreed to prior to each major event. Logistic support will include consideration of both in-kind assistance through air transport, shared billeting, security detail, food, materials, and ground transportation, and financial compensation for agreed-to response actions that could not be supported by in-kind assistance, including compensation for performance of services to support the deployment and execution of rapid response search teams.

4. The USAF, working in collaboration with the Service, and USDA-WS, will decide how best to implement the Brown Treesnake Control Plan (BTS TWG 2009, 37 pp.) relevant to Divert activities. The USAF and Service must mutually agree on the Brown Treesnake Control Plan implementation.
5. The USAF will provide invasive species awareness training for all military and contractor personnel prior to all training activities. This would include a mandatory viewing of a brown treesnake educational video, distribution of pocket guides with brown treesnake information and personal inspection guidelines to be carried at all times, and assurance that brown treesnake awareness extends from the chain of command to the individual military service member.
6. Due to limited availability of inspectors, trained dogs, and quarantine facilities and equipment on Guam and the CNMI, the USAF will coordinate closely with the Service, U.S. Department of Agriculture, CNMI Department of Lands and Natural Resources, and JRM staff responsible for managing their brown treesnake program, on planning for training activities on Tinian. The USAF, along with cooperating agencies, will identify the inspection and interdiction requirements for the Divert training, including the number of trained quarantine officers and dog detection teams required. The USAF will coordinate and consult with the Service on the inspection and interdiction requirements identified by the USAF, and the Service must concur with these requirements prior to the implementation of the exercise or training activity. The USAF, along with the cooperating agencies, will develop plans to ensure that inspection personnel are available and that all requirements can be met, and will identify the support that the USAF will need to provide for the inspections. Planning for training exercises generally begins months prior to implementation of an exercise, and planning for complex training that would require a substantial number of inspectors, quarantine areas, or other personnel or equipment for control and interdiction generally begins more than a year in advance. If adequate resources, such as trained inspectors and dog teams, are not available during training activities, training will not occur until resources are available.

Prevention of Invasive Species Introductions and Spread

1. All personnel involved in Divert training will adhere to COMNAVMARIANASINST 5090.10A and the 2005 Brown Treesnake Control and Interdiction Plan, which calls for individual troops to conduct self-inspections to avoid potential transport of brown treesnakes. Troops will inspect all personal gear and clothing (e.g., boots, bags, weapons, pants), hand-carried equipment, and supplies and tent canvas. The intent of this measure is to minimize the potential risks and subsequent effects associated with transport of troops and personnel from Guam to the CNMI and other areas that do not have brown treesnakes.
2. In addition to self-inspections, each training action will undergo a pathway risk analysis as a tool to improve programmatic efficiency while preventing the spread and introduction of invasive species. Actions at risk of transporting invasive species will have prevention tasks identified and implemented to reduce risk. Methods employed such as HACCP planning development and implementation by the USAF may be utilized to conduct pathway analysis. Pathway risk analysis must be completed prior to each training action being implemented.

The USAF is a participating agency in the development of the Micronesia Biosecurity Plan. The Micronesia Biosecurity Plan is intended to coordinate and integrate inter-agency invasive species management efforts such as control, interdiction, eradication, and research. Once completed, any portions of the Micronesia Biosecurity Plan determined to be applicable to Divert construction and training activities, will be implemented when such procedures do not unduly interfere with military training. The USAF will continue to work cooperatively with the Service and U.S. Department of Agriculture in development of protocols for implementation of interdiction and control methods in accordance with recommendations contained in the Micronesia Biosecurity Plan identified as being tied to USAF actions.

ANALYSIS OF EFFECTS OF THE ACTION

Your letter indicates you have determined the proposed actions on Tinian will have no effect to the endangered Mariana fruit bat (*Pteropus mariannus mariannus*), Mariana common moorhen (*Gallinula chloropus guami*), Micronesian megapode (*Megapodius laperouse*), and the proposed species *Heritiera longipetiolata*, *Dendrobium guamense*, and humped tree snail (*Partula gibba*) (these species were listed under the Act on October 1, 2015; 80 FR 59423). The Tinian monarch (*Monarcha takatsukasae*) was delisted in 2004 (69 FR 56367).

To conclude a proposed action is not likely to adversely affect listed species, the Service must find that the effects of the proposed action are expected to be insignificant, discountable, or beneficial. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs, discountable effects are those that are extremely unlikely to occur, and beneficial effects are positive effects without any adverse effects. We applied this standard, as well as consideration of the probable duration, frequency, and severity of potential project stressors in our analysis of effects of the proposed action on the green turtle and hawksbill sea turtle.

Green and hawksbill turtles forage offshore of Tinian (Pultz et al. 1999; Kolinski et al. 2001; Maison et al. 2010) and a small population of green sea turtles nests on most beaches on Tinian (Pultz et al. 1999, NAVFAC 2014). One hawksbill sea turtle nest was found on the northeastern

The sea turtle ear appears to be adapted for hearing in water, but on land sea turtle hearing is comparable to that of a person with moderate to severe hearing loss (Ridgway et al 1969, Lenhardt 1994, and Magyar 2009, Lin et al 2011). Findings by Mabyar (2009) indicate that although hatchlings in water are very responsive to noise, displaying agitated behavior, abrupt body movements, and startle responses, on land, airborne experimental and beachside nightclub noise did not elicit a measureable response or affect nestling direction of movement from the nest to the ocean. The shell and bones may conduct noise through the turtle's body to its ears, which are enclosed within soft tissue in its head (Dow Piniak et. al. 2012).

Studies indicate green turtles don't hear airborne sounds unless the sound level intensities are above 50 db (at 200 Hz) and 92 dB (at 50 Hz) (Ridgway et al 1969, Lenhardt 1994, and Magyar 2009). This level of hearing is comparable to a human with moderate (at 200 Hz) to severe (at 50 Hz) hearing loss. For reference, the decibel sound pressure level scale is calibrated at zero to the limits of human hearing (U.S. DOT FHA 2006), whereas predators can hear airborne sounds in the -20 dB range. Therefore, although higher frequency portion of the anticipated 70 – 79 dB aircraft takeoff and landing airborne noise will be audible to green turtles at Unai Barcinas and Unai Leprosarium, the noise is not expected to elicit a measurable response or affect nesting behavior of turtles on these beaches. In addition, because the majority of flights will be during the day, when turtles are not expected to be on the beaches, exposure of turtles to noise related to aircraft takeoff and landing will be minimal. Therefore, effects of the proposed action to sea turtles are expected to be insignificant.

CONSERVATION RECOMMENDATIONS

We are concerned about potential project impacts to the Tinian monarch, a species delisted in 2004. This endemic bird only occurs on Tinian and the population has declined 38 percent between 1996 and 2008. Project activities may result in noise disturbance, habitat loss, and other impacts to Tinian monarchs. We recommend project impacts, including clearing vegetation suitable for Tinian monarch use, be avoided. In 2013, we received a petition requesting that the Tinian monarch be listed as threatened or endangered under the ESA. We are in the process of reviewing the petition.

CONCLUSION

Based on the description of the proposed action and on the best information available to describe the behaviors and biological needs of the species considered here, the Service concurs with your determination that the proposed action on Tinian is not likely to adversely affect the green turtle and the hawksbill sea turtle. In addition, we conclude that activities described in the revised project description for Saipan are within the scope of the project described in the Divert Biological Opinion, and therefore the effects of those actions will be consistent with the analysis in that Biological Opinion.

REINITIATION STATEMENT

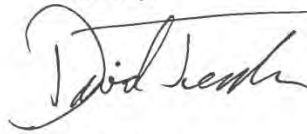
Should project plans change, or if monitoring efforts by the Air Force, contractors, or the CNMI, indicate that project components are having an effect on listed species not anticipated in this

consultation, please contact us immediately so we may assist you in ensuring continued project compliance with the ESA.

This concludes section 7 consultation on this action. As required in 50 CFR § 402.16, reinitiation of consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operation causing such take must cease pending reinitiation.

If you have any questions or concerns about this consultation or the consultation process in general, please feel free to email Jacqueline Flores at jacqueline_flores@fws.gov or contact her at (671) 989-6744.

Sincerely,

A handwritten signature in black ink, appearing to read "David Tessler", with a stylized, cursive script.

David Tessler
Acting Field Supervisor

cc:
Wildlife Supervisor, CNMI, Department of Land and Natural Resources
Kevin Brindock, Joint Region Marianas

REFERENCES

- Dow Piniak, W.E., D.A. Mann, S.A. Eckert, and C.A. Harms. 2012. Amphibious hearing in sea turtles. IN A.N. Popper and A. Hawkins (eds.), *The Effects of Noise on Aquatic Life*, *Advances in Experimental Medicine and Biology* 730.
- Hodgdon, K.K., A.A. Atchley, and R.J. Bernhard. 2007. Low Frequency Noise Study. Partner Report No. Partner-COE-2007-001. The Partnership for Air Transportation Noise and Emissions Reduction, Massachusetts Institute of Technology.
- Kolinski, S.P., D.M. Parker, L.I. Ilo, and J.K. Ruak. 2001. An assessment of the sea turtles and their marine and terrestrial habitats at Saipan, Commonwealth of the Northern Mariana Islands. *Micronesica* 34:55-72.

- Lin, F.R., R.Thorpe, S. Gordon-Salant, and L. Ferrucci. 2011. Hearing loss prevalence and risk factors among older adults in the United States. *J Gerontol A Biol Sci Med Sci* 66A (5): 582-590. <http://biomedgerontology.oxfordjournals.org/content/66A/5/582.full>
- Mabyar, T. 2009. The impact of artificial lights and anthropogenic noise on Loggerheads (*Caretta caretta*) and Green Turtles (*Chelonia mydas*), assessed at index nesting beaches in Turkey and Mexico. Dissertation, University of Bonn. April 17, 2009.
- Maison, K.A., K.I. Kinain, and K.P. Frutchey. 2010. Green turtle nesting sites and sea turtle legislation throughout Oceania. U.S. National Oceanic and Atmospheric Administration Memorandum NMFS-F/SPO-110.
- NAVFAC. 2014. Sea Turtle Marine Resources Survey Report in Support of the Commonwealth of the Northern Mariana Islands Joint Military Training Environmental Impact Statement/Overseas Environmental Impact Statement. Department of the Navy, Naval Facilities Engineering Command, Pacific. Hawaii.
- NAVFAC. 2015. Draft Commonwealth of the Northern Mariana Islands Joint Military Training Environmental Impact Statement/Overseas Environmental Impact Statement. Department of the Navy, Naval Facilities Engineering Command, Pacific. Hawaii.
- Pultz, S., D. O'Daniel, S. Krueger, and H. McSharry. 1999. Marine turtle survey on Tinian, Mariana Islands. *Micronesica* 31:85-94.
- Ridgway, S. H., E.G. Wever, J.G. McCormick, J. Palin, J.H. Anderson. 1969. Hearing in the giant sea turtle, *Chelonia mydas*. *Proc. Natl. Acad. Sci.* 64: 884-890.
- U.S. Department of Transportation Federal Transportation Administration. 2006. Transit noise and vibration impact assessment. Noise and Vibration Manual. http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf

Appendix 1

Evaluation of Requirements for Reinitiation of Formal Consultation for Planned Divert Activities and Exercises on Saipan

The U.S. Pacific Air Forces (PACAF) and U.S. Fish and Wildlife Service (USFWS) completed consultation as required by Section 7 of the Endangered Species Act (ESA) in June 2013 for planned divert activities and exercises at the Saipan International Airport (GSN). Since June 2013, PACAF has modified their plans for activities on Saipan, and has therefore considered whether consultation should be re-initiated for their planned activities. As summarized in this paper, and based on the requirements in 50 CFR 402.16, re-initiation of consultation is not required for activities now planned to occur on Saipan. This paper also identifies the conservation measures specified in the 2013 Biological Opinion (BO) that are applicable to activities currently proposed on Saipan. This analysis was based on the alternative or combination of activities currently being considered in the Revised Draft Environmental Impact Statement that would have the greatest effect on listed species (e.g., the largest facility footprints, the maximum number of flight events).

2013 Consultation – PACAF prepared a Biological Assessment (BA) and requested formal consultation in September 2012 to consider effects to the endangered nightingale reed-warblers from planned activities and exercises for the Divert proposed project on Saipan. Planned activities considered in the BA (and subsequently in the 2013 BO) included the following.

- Disturbance of up to 59 acres at GSN and 4 acres at the Port of Saipan, including the clearing of 11.0 acres of tangantangan forest at GSN.
- Training activities at GSN for up to eight weeks per year and involving:
 - Joint fighter, cargo, and tanker aircraft, not to exceed 24 fighters, or 12 cargo/tanker aircraft, or a mix of those aircraft.
 - Up to 700 personnel participating in an exercise.
 - On-site, temporary billeting of personnel during some exercises.
 - Up to about 72 takeoffs and landings of military aircraft per day during exercises, totaling up to about 1,920 per year.
- Emergency and other unplanned divert landings of military aircraft.

PACAF concluded that the proposed activities would not affect Mariana fruit bats and Micronesian megapodes, and that those activities may affect, but would not be likely to adversely affect Mariana common moorhens, Mariana swiftlets, and nesting green sea turtles. They also concluded that the project is likely to adversely affect the nightingale reed-warbler.

The BA and BO considered the following effects to nightingale reed-warblers.

- Habitat loss, fragmentation, and degradation, leading to the destruction of one nightingale reed-warbler territory from clearing of 6.4 acres of habitat for the east parking ramp.
- Indirect effects to other nightingale reed-warbler territories from increased noise during construction.
- Increased noise from aircraft overflights, possibly causing:
 - Habitat loss or degradation, harassment, increased energetic costs, abandonment of territories or other adverse modifications of behavior, nest abandonment, decreased ability to communicate, and adverse physiological effects from the operation of joint fighter aircraft. Up to 13 nightingale reed-warbler pairs could be affected.
 - No adverse effects from the operation of KC-135 and similar aircraft.
- Increased risk of the introduction and spread of non-native invasive species during construction and implementation.

Current Planned Activities at Saipan – Based on public and agency input into the Draft EIS for divert activities and exercises, the USAF removed numerous elements from their planned activities on Saipan including:

- Runway extension
- Navigational aids
- Aircraft hanger
- Temporary munitions storage
- Arm/disarm pad
- Tent billeting (lodging)
- Fighter aircraft operations.

PACAF currently is planning to implement the following activities at Saipan that could affect listed species (**Table 1**).

- Disturbance of up to 31 acres at GSN and 4 acres at the Port of Saipan, including the clearing of 6.6 acres of tangantangan forest.
- Training activities at GSN for up to eight weeks per year involving:
 - Operation of KC-135 tankers or similar aircraft, but no fighter aircraft, from GSN.
 - Up to 265 personnel participating in an exercise (but no onsite billeting/tent lodging).
 - A typical exercise of 2 to 4 KC-135 aircraft, with each aircraft taking off and landing twice per day.
 - About 720 tanker operations per year. (An operation is considered one take-off, or one landing).
- Emergency and other unplanned divert landings of military aircraft.

These activities will have the following effects on nightingale reed-warblers, which would be similar to or less than those considered during the completed consultation.

1. Loss of habitat from clearing of 6.4 acres of tangantangan forest. The east parking ramp would not be constructed and the territory there would not be directly affected.
2. Indirect effects to nightingale reed-warbler territories from increased noise during construction.
3. Noise from aircraft overflights, leading to:
 - No adverse effects from the operation of KC-135 and similar aircraft
4. Increased risk of the introduction and spread of non-native invasive species during construction and implementation.

Table 1. Comparison of Previously Planned and Currently Planned Divert Activities and Exercises on Saipan.

	2013 Planned Activities	Current Planned Activities
Total acres to be disturbed	59	31
Acres of tangantangan	11.0	≤6.6 ¹
Fighter aircraft	Yes	No
Maximum number of personnel per exercise	700	265
Number of aircraft per day	12–24	2–4
Maximum of operations per day	72	16
Operations per year	1,920	720
Emergency landings	Yes	Yes

¹ Amount of acreage to be disturbed would be less under hybrid modified alternative discussed at 21 Aug 15 meeting.

Requirements for Reinitiation of Consultation – The implementing regulations for Section 7 of the ESA at 50 CFR 402.16 identify four conditions that would require reinitiation of formal consultation.

1. Exceed the amount of taking – The project has not been implemented and no take has occurred.
2. New information is available that identifies effects of the action not previously considered – No new information is available about potential effects.
3. Modification of the action that would cause an effect that was not previously considered – Planned activities will cause the same types of effects as considered in the 2013 BO, but those effects will be of a lesser magnitude.
4. A new species is listed or critical habitat is designated – Six species that could occur on Saipan have been proposed for listing since completion of consultation in 2013. The USFWS has confirmed that none of these species would occur in the tangantangan forest or disturbed/developed areas that would be used for planned activities GSN (letter from R. Rounds, USFWS, to W. Grannis, AFCEC, 22 January 2015); thus, there will be no adverse effects to those species.

50 CFR 402.16 Reinitiation of formal consultation.

Reinitiation of formal consultation is required and shall be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and:

- (a) If the amount or extent of taking specified in the incidental take statement is exceeded;
- (b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- (c) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or
- (d) If a new species is listed or critical habitat designated that may be affected by the identified action.

Conclusion – Based on this analysis, it is concluded that none of the four requirements in 50 CFR 402.16 are applicable; therefore, PACAF does not need to reinitiate formal consultation for planned divert activities and exercises on Saipan.

Conservation Measures – Table 2 lists the conservation measures that PACAF plans to implement to comply with the requirements of the BO if planned divert activities and exercises are conducted on Saipan. These are the same measures identified in the BO, with the following clarifications:

- No credit will be purchased from the Saipan Upland Mitigation Bank for construction of the east parking apron, as that facility will not be constructed. All other effects during construction would be similar to or less than those considered in the BO, and in accordance with that document, implementing those other construction activities do not require the purchase of a credit to compensate for direct or indirect effects to nightingale reed-warblers or their habitat.
- No credits will be purchased for the loss of nightingale reed-warbler territories caused by noise from operating fighter aircraft. PACAF now plans to operate only KC-135 aircraft, which (as concluded in the BO) would not result in adverse effects to nightingale reed-warblers.

TABLE 2. SAIPAN NATURAL RESOURCE MITIGATION MEASURES DEFINED IN SEC 7 CONSULT

NO.	MITIGATION MEASURES FROM DIVERT BIOLOGICAL OPINION, SAIPAN	SOURCE OF REQUIREMENT	DUE	Modified Saipan Alternative	COMMENTS/CONSIDERATIONS
1	Purchase credit in SUMBA prior to construction of Eastern Parking Ramp	Conservation measure considered part of project description	prior to construction of east parking apron	Not Applicable	East Parking Ramp is no longer part of the proposed action.
2	Clearing vegetation only during Oct-Dec or Apr-Jun	Conservation measure considered part of project description	Construction	Applicable	
3	No laydown yard or temp construction area within nightingale reed warbler habitat or 50 meter buffer zone around reed-warbler territories.	Conservation measure considered part of project description	Construction	Applicable	
4	When possible, the use of very noisy (greater than 60 decibels A-weighted (dBA)) heavy machinery should be limited to the non-active or non-peak breeding seasons or temporary noise barriers or buffer zones should be installed to protect nightingale reed-warblers using buffer zones or areas of connectivity	Conservation measure considered part of project description	Construction	Applicable	
5	Adequate plastic construction fencing will be placed and maintained around any habitat that is to be avoided (including buffer areas and adjacent parcels) to prevent impacts to habitat from construction equipment and personnel.	Conservation measure considered part of project description	Construction	Applicable	
6	All on-site construction personnel will receive instructions regarding the presence of listed species and the importance of avoiding and minimizing impacts to these species and their habitat.	Conservation measure considered part of project description	Construction	Applicable	
7	All on-site personnel will receive instruction regarding the BTS and what to do immediately in case of a sighting.	Conservation measure considered part of project description	Construction	Applicable	
8	The USAF will ensure that no unauthorized take of nightingale reed-warbler or destruction of their habitat occurs. The USAF will have the authority to stop all activities that may result in such take or destruction until appropriate collective measures have been completed. The USAF will report immediately any unauthorized impacts to the Service and CNMI DFW.	Conservation measure considered part of project description	Construction/Implementation	Applicable	
9	Litter control (see BO for details)	Conservation measure considered part of project description	Construction	Applicable	
10	Reporting to USFWS within 30 days of construction implementation to document implementation of any fencing, buffer zones, and minimization measures.	Conservation measure considered part of project description	Within 30 days of construction start	Applicable	
11	Pay SUMBA for 17 Nightingale Reed Warbler Territories if using Fighters	Conservation measure considered part of project description	Implementation Phase: prior to flying fighters	Not applicable	No fighters will be used during Divert exercises and activities.
12	Develop Hazard Analysis and Critical Control Point (HACCP) plans for construction and coordinate development with the Service	Conservation measure considered part of project description	prior to construction activities	Applicable	
13	Brown Tree Snake Inspections for 100% of outgoing vessels from Guam to Saipan (see BO for details). Will be performed with trained quarantine officers and dog detection teams	Conservation measure considered part of project description	Construction/Implementation	Applicable	Inspection is already in place and this is a normal course of action.
14	Avoid routing flights through Guam for exercises	Conservation measure considered part of project description	Implementation Phase	Applicable	
15	100% redundant inspections after discussions with appropriate stakeholders. Redundant inspections include inspections on Guam and at the receiving jurisdiction for administrative and logistical movements that do not require a tactical approach to complete the training requirements... In the event that there is inadequate inspection coverage the USAF will coordinate with the USDA-WS to provide additional canine inspection teams that will augment quarantine and inspection protocols at the receiving ports.	Conservation measure considered part of project description	Construction/Implementation	Applicable	
16	Establish Snake-Free Quarantine Areas for cargo traveling from Guam to CNMI and other brown treesnake-free areas (see BO for details)	Conservation measure considered part of project description	Construction/Implementation	Applicable	The existing quarantine area at Saipan Port may suffice for shipments. If HACCP determines it is insufficient, temporary barriers may be necessary. IBM is developing a standard design using shade cloth with stakes. At the airport, the temporary barriers are what is recommended by USFWS.

I

TABLE 2. SAIPAN NATURAL RESOURCE MITIGATION MEASURES DEFINED IN SEC 7 CONSULT

NO.	MITIGATION MEASURES FROM DIVERT BIOLOGICAL OPINION, SAIPAN	SOURCE OF REQUIREMENT	DUE	Modified Saipan Alternative	COMMENTS/CONSIDERATIONS
17	The USAF, in conjunction with the Service and JRM, will develop procedures and protocols specific to Divert training events that will support a rapid response action in the event of a brown treesnake sighting resulting from Divert activities. USAF will agree on the type and amount of logistical support in advance of a training event and will provide agreed-to support for a rapid response resulting from Divert activities (see BD for details)	Conservation measure considered part of project description	Construction/Implementation	Applicable	
18	The USAF, working in collaboration with the Service, and USDA-WS, will decide how best to implement the Brown Treesnake Control Plan (BTS TWG 2009, 37 pp.) relevant to Divert activities. The USAF and Service must mutually agree on the Brown Treesnake Control Plan Implementation.	Conservation measure considered part of project description	Construction/Implementation	Applicable	
19	The USAF will provide invasive species awareness training for all military and contractor personnel prior to all training activities.	Conservation measure considered part of project description	Construction/Implementation	Applicable	
20	USAF will coordinate with the Service, U.S. DDA, CHMIL DLNR and JRM on planning for training activities on Saipan. The USAF, along with cooperating agencies, will identify the inspection and interdiction requirements for the Divert training, including the number of trained quarantine officers and dog detection teams required. The USAF will coordinate and consult with the Service on the inspection and interdiction requirements identified by the USAF, and the Service must concur with these requirements prior to the implementation of the exercise or training activity. The USAF, along with the cooperating agencies, will develop plans to ensure that inspection personnel are available and that all requirements can be met, and will identify the support that the USAF will need to provide for the inspections... If adequate resources, such as trained inspectors and dog teams, are not available during training activities, training will not occur until resources are available.	Conservation measure considered part of project description	Implementation	Applicable	
21	Troop self-inspections IAW DoD Instruction 5090.10A and the 2005 Brown Treesnake Control and Interdiction Plan.	Conservation measure considered part of project description	Implementation	Applicable	
22	Perform pathway risk analysis for each training action	Conservation measure considered part of project description	Implementation	Applicable	
23	Once completed, any portions of the Micronesia Biosecurity Plan determined to be applicable to Divert construction and training activities, will be implemented when such procedures do not unduly interfere with military training.	Conservation measure considered part of project description	Construction/Implementation	Applicable	The Micronesia Biosecurity Plan is now final as the "Regional Biosecurity Plan for Micronesia and Hawaii." Determination on what is applicable has not yet been made.
24	Monitor and report take as specified in Incidental Take Statement	Incidental Take Statement	Construction/Implementation	Applicable	During construction the monitor and report must be by the environmental monitor. After construction, the BOS contract must take this over.
25	One nightingale reed-warbler territory will be cleared for construction of the east parking apron resulting in harm of up to two adults and up to four juveniles.	Incidental Take Statement	Construction	Not applicable	Only applicable if east parking ramp were constructed. This ramp is not part of the proposed action for the revised project.
26	Four nightingale reed-warbler territories could be abandoned due to habitat degradation from repeated and loud noise from fighter jet training resulting in harassment of up to eight adults and up to sixteen eggs, chicks, or juveniles.	Incidental Take Statement	Implementation	Not applicable	
27	Thirteen nightingale reed-warbler territories will suffer habitat degradation from noise disturbance from fighter jet training resulting in periodic, but rare, harassment of up to twenty-six adults.	Incidental Take Statement	Implementation	Not applicable	
28	The USAF shall minimize the potential for harassment, harm, or mortality of nightingale reed-warblers	Reasonable and Prudent Measures	Construction/Implementation	Applicable	
29	To the extent practicable, consistent with national security and contingency requirements, and military safety and security requirements, the USAF will notify the Service on an annual basis of upcoming Divert training events at GSN including timing and description of the joint military exercises.	Terms and Conditions	Implementation	Applicable	

TABLE 2. SAIPAN NATURAL RESOURCE MITIGATION MEASURES DEFINED IN SEC 7 CONSULT

NO.	MITIGATION MEASURES FROM DIVERT BIOLOGICAL OPINION, SAIPAN	SOURCE OF REQUIREMENT	DUE	Modified Saipan Alternative	COMMENTS/CONSIDERATIONS
30	Annual report to USFWS	Terms and Conditions	1 Dec, beginning in 2014	Applicable	Report was provided to Service at end of 2014; reports will continue and will contain details required per terms and conditions as project is approved and proceeds.
31	The USAF will convene an annual coordination meeting or conference call prior to 28 February of each year, starting in 2015, to discuss findings within the compliance report and adapt avoidance, minimization, and conservation measures to further reduce incidental take.	Terms and Conditions	prior to 28 Feb each year, starting in 2015		Not done in 2015 as project was on ice at that time. Recommend we agree it will not be done until the ROD that selects location is signed and design/construction activity begins.
32	Monitoring of fighter noise effects on NRW for fighters only	Conservation Recommendation	Implementation	Not applicable	
33	Conservation Recommendation: rat/cat control measures	Conservation Recommendation	Construction/Implementation	Applicable	

**USAF letter to NMFS Requesting Concurrence with Not Likely to
Adversely to Affect Determination for Marine Species,
October 3, 2012**



**DEPARTMENT OF THE AIR FORCE
AIR FORCE CIVIL ENGINEER CENTER
JOINT BASE PEARL HARBOR – HICKAM, HAWAII**

03 OCT 2012

MEMORANDUM FOR NATIONAL MARINE FISHERIES SERVICE
MS. ALECIA VAN ATTA
ASSISTANT REGIONAL ADMINISTRATOR FOR PROTECTED
RESOURCES
NATIONAL MARINE FISHERIES SERVICE
PACIFIC ISLAND REGIONAL OFFICE
1601 KAPIOLANI BLVD, SUITE 1110
HONOLULU, HI 96814

FROM: AFCEC/Pacific Division/Environmental and Real Property Branch
25 E Street, Suite B-309
Joint Base Pearl Harbor-Hickam HI 96853-5420

SUBJECT: Request for Concurrence with Not Likely to Adversely Affect Threatened and
Endangered Marine Species Determination for Divert Activities and Exercises at the Saipan and
Tinian International Airports, Commonwealth of Northern Mariana Islands (CNMI)

1. The U.S. Air Force (USAF) respectfully requests your concurrence on the determination that developing facilities and implementing divert activities and exercises at the Saipan and Tinian International Airports, CNMI may affect, but are not likely to adversely affect the following marine species: green sea turtle (*Chelonia mydas*), hawksbill sea turtle (*Eretmochelys imbricate*), leatherback sea turtle (*Dermochelys coricea*), olive ridley sea turtle (*Lepidochelys olivacea*), blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), sei whale (*Balaenoptera borealis*), and sperm whale (*Physeter macrocephalus*).


2. For this consultation, the USAF has integrated the requirements of the National Environmental Policy Act and Endangered Species Act so that all procedures run concurrently. As such, in accordance with 50 CFR Section 402.06(a), the USAF intends to have the Draft Environmental Impact Statement for Divert Activities and Exercises Guam and Commonwealth of the Northern Mariana Islands (referred to as "the EIS") stand as the Biological Assessment for threatened and endangered marine species that could be affected by the project. That document is available at: <http://pacafdivertmarianaseis.com/>.

The action area is considered all areas where threatened and endangered species could be directly and indirectly affected by the project, the potential effects of which include sedimentation and noise. For this project the action area is the nearshore waters of Saipan and Tinian and all areas that could be affected by noise (Attachment 1). Information on the proposed facilities to be developed and the actions proposed in Saipan and/or Tinian are in Section 2.3 of the EIS. Because of the scope of the project, it is not possible to conduct an onsite inspection of all areas affected. It is assumed that all ESA-listed species that could potentially occur in the action area would be seasonally present in the appropriate habitat, as described by the literature review. Sections 3.7.2 of the EIS provide a literature review of the status of the threatened and endangered species in the action area. Sections 4.7 and 5.3.7 of the EIS provide a detailed

analysis of the potential effects (including cumulative effects) of the project on threatened and endangered species. The justification for the determination that the project may affect, but is not likely to adversely affect marine threatened and endangered species is provided at Attachment 2.

Note that we have addressed comments on the Draft EIS provided by the National Marine Fisheries Service, Pacific Islands Regional Office, Habitat Conservation Division and Protected Resources Division on 17 and 18 July 2012, respectively, and incorporated changes into the EIS as appropriate. You can review USAF responses to all comments on the EIS in the comment-response matrix in Appendix G of the Final EIS when it is available later this year.

3. Should you have any questions or require additional information, please contact Mr. William Grannis (808)449-4049, or, william.grannis@us.af.mil.



J. MARK INGOGLIA, GS-14, DAF
Chief, Environmental and Real Property
Branch, Pacific Division
Facilities Engineering Center of Excellence
Air Force Civil Engineer Center

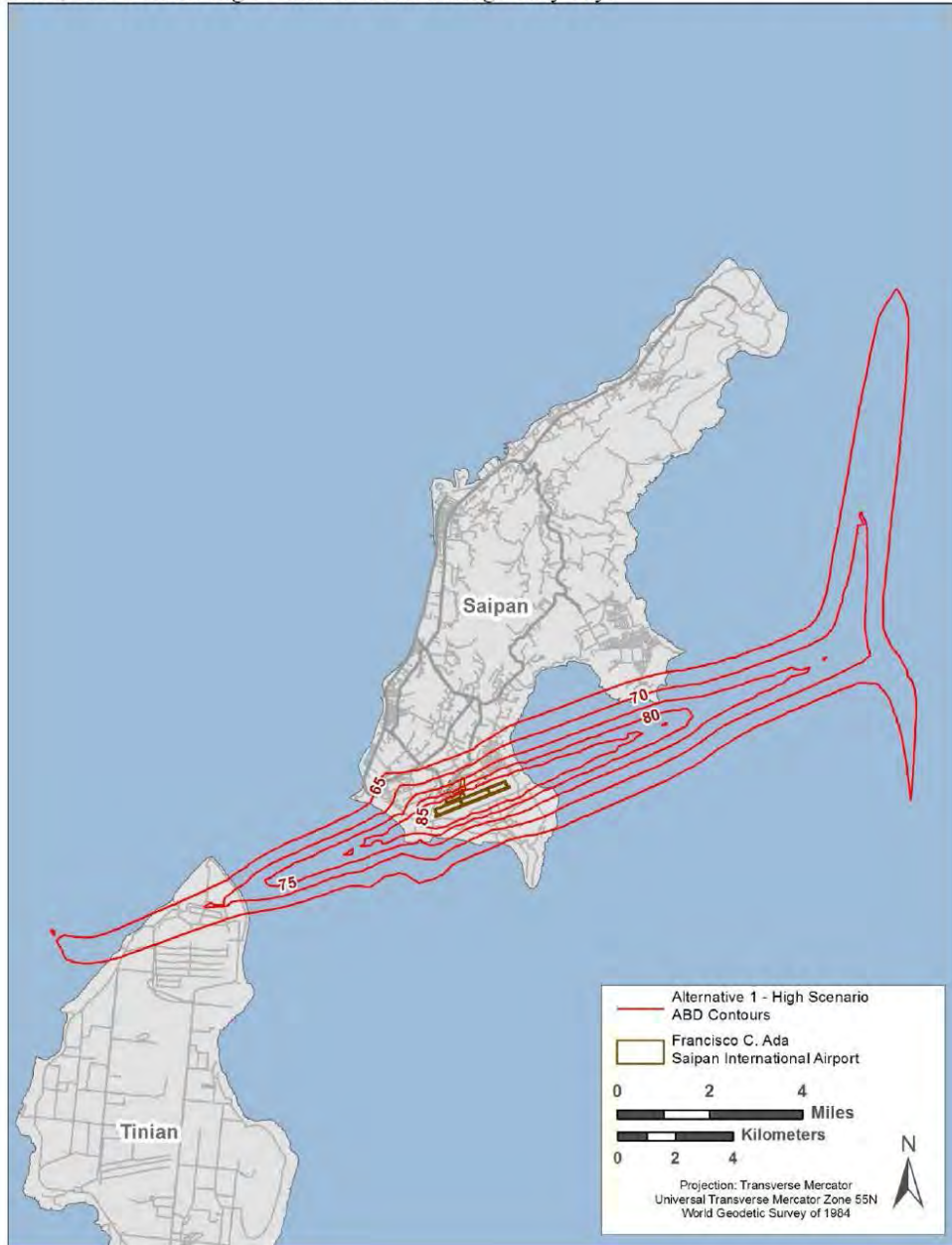
2 Attachments:

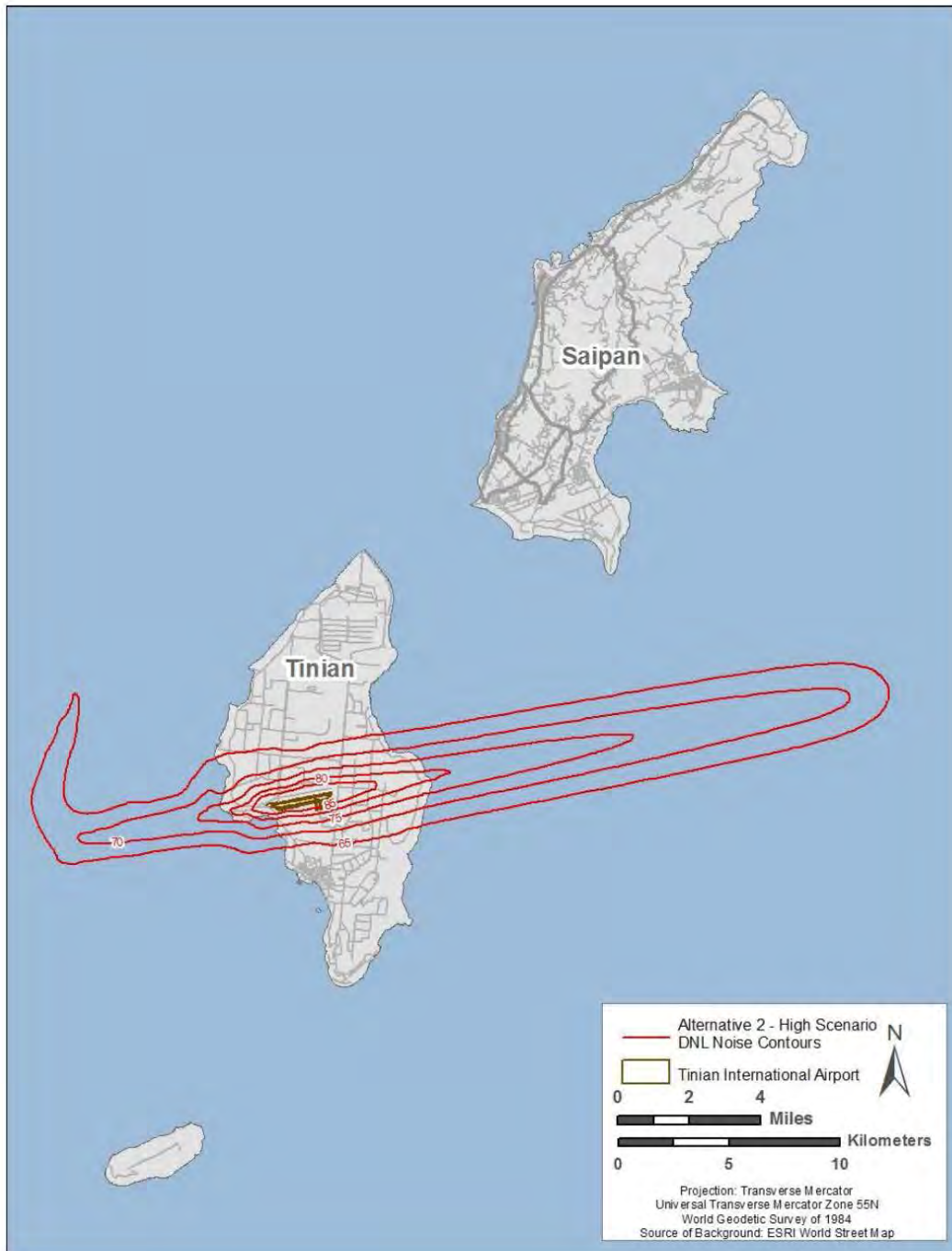
1. Figures Showing Action Areas on Saipan and Tinian
2. Effects of the Divert Activities and Exercises at the Saipan and Tinian International Airports, Commonwealth of Northern Mariana Islands (CNMI) on Marine Threatened and Endangered Species

cc:
HQ PACAF/A7P
AFCEE/TDX

Attachment 1: Action Area

The action area is the nearshore waters of Saipan and Tinian and all areas that could be affected by noise, based on the high estimate for an average busy day.





Attachment 2: Effects of the Divert Activities and Exercises at the Saipan and Tinian International Airports, Commonwealth of Northern Mariana Islands (CNMI) on Marine Threatened and Endangered Species

While threatened and endangered species of sea turtles and marine mammals occur in the project area, impacts of the project are expected to be insignificant. No construction will occur in the marine waters surrounding Saipan or Tinian and no other direct impacts from construction are expected. An erosion and sediment control plan (ESCP) will be developed per the Northern Mariana Islands Earthmoving and Erosion Control Regulations, and a non-commercial earthmoving permit will be obtained from the CNMI Department of Environmental Quality (DEQ). The ESCP will describe the best management practices (BMPs) to be implemented to prevent loss of soil during construction by storm water runoff or wind erosion and to prevent sedimentation of storm sewer or receiving water bodies. BMPs could include installing silt fencing and sediment traps, applying water to disturbed soil, and revegetating disturbed areas as soon as possible after the disturbance, as appropriate. Construction BMPs will be developed and implemented following Department of Defense policy for implementing guidelines provided in Federal and CNMI permitting processes and regulations (e.g., U.S. Environmental Protection Agency Construction General Permit, CNMI DEQ Earthmoving and Erosion Control Regulations and permit), Energy Independence and Security Act Section 438, the CNMI DEQ Stormwater Management Manual). In addition, storm water management and infiltration features will be designed in accordance with the CNMI DEQ Stormwater Management Manual. The implementation of erosion and sediment control measures during and after construction will minimize indirect effects of sedimentation on nearshore habitat and sea turtle nesting habitat, resulting in insignificant indirect effects on marine mammals and sea turtles.

The project is expected to result in elevated noise levels during take off and landings. The exposure of sea turtles and marine mammals to elevated noise levels would be brief (seconds) and would only occur over a period of no more than, at total, 8 weeks of the year. Most sound from aircraft is reflected off the surface of the water and only penetrates a small area of aircraft path over the water. The majority of the flights would occur during the day, while sea turtle nesting occurs at night. In addition to take-offs and landings during military exercises, military aircraft would also conduct training over the ocean within the MIRC. However, these training activities are covered under the Programmatic Biological Opinion on military readiness activities issued by the National Marine Fisheries Service in August 2011 to the U.S. Navy for training activities to be conducted in the Mariana Islands Range Complex. The training exercises are also covered under the NMFS 2010 Final Rule for *Taking and Importing Marine Mammals: Military Training Activities and Research, Development, Testing, and Evaluation Conducted Within the Mariana Islands Range Complex* (75 FR 45527-45556) and the Letter of Authorization, *Taking and Importing Marine Mammals: Taking Marine Mammals Incidental to Navy Training Exercises in the Mariana Islands Range Complex* (77 FR 46733-46739), which is effective until 3 August 2015.

Shipping is not expected to increase as a result of the project. A small but currently unknown number of marine shipments of materials will be required to support construction of facilities at one or both of the airports. The cumulative number of shipments for this project and all other activities in the CNMI during the construction period will be similar to or less than that experienced in the region over the last 10 years. Additionally, the Saipan and Tinian harbors currently receive fuel and it is likely that the same or similar tankers that currently supply those islands with fuel would do so for military exercises. Those tankers currently have excess capacity when delivering fuel to the islands; thus, few or no additional shipments will be required for this project. As such, shipping would not increase in the Saipan or Tinian harbors and surrounding region and an increased potential for sea turtle and marine mammal-vessel interactions or a fuel spill is not expected. In addition, the Saipan and Tinian harbors are capable of accepting the material

and fuel shipments required for this project and no in-water improvements to those harbors will be required.

The Project is not expected to result in an increase in lights viewed from the nearshore waters or beaches of Saipan or Tinian. While lighting would be expanded near existing facilities and parking lots at one or both of the airports, no new light would be placed between the airfields and the closest shorelines, which are at least 0.25 miles from the end of the runways. The approach lighting, which is closest to the shoreline, would be angled away from the beach and no forested vegetation would be removed from the ends of the runways. Additionally, both airports are on mesas above the beaches. Any additional lighting required at the fuel tanks to be installed adjacent to the port facilities would be located in developed areas with substantial existing lighting. As such, a cumulative increase in light pollution, which can disrupt sea turtle nesting, is not expected.

Because the components of the project would not have more than an insignificant impact threatened and endangered sea turtles and marine mammals, the USAF has determined that the Project may affect, but is not likely to adversely affect the following species.

- green sea turtle
- hawksbill sea turtle
- leatherback sea turtle
- olive ridley sea turtle
- blue whale
- fin whale
- humpback whale
- sei whale
- sperm whale

**NMFS Response Letter to USAF Stating Concurrence with the Not Likely to
Adversely to Affect Determination for Marine Species,
October 30, 2012**



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Regional Office
1601 Kapiolani Blvd., Suite 1110
Honolulu, Hawaii 96814-4700
(808) 944-2200 • Fax: (808) 973-2941

OCT 30 2012

Mr. J. Mark Ingoglia
Chief, Environmental and Real Property Branch
Department of the Air Force
Air Force Civil Engineer Center
25 E Street, Suite B-309
Joint Base Pearl Harbor-Hickam HI 96853-5420

Dear Mr. Ingoglia:

This letter responds to your October 3, 2012 letter regarding the proposal by the US Air Force (USAF) to implement Divert Activities and Exercises at the Saipan and Tinian International Airports, in the Commonwealth of the Northern Mariana Islands (CNMI). The letter stated the USAF determination that the proposed project is not likely to adversely affect marine species under National Marine Fisheries Service (NMFS) jurisdiction, and requested our concurrence under section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. §1531 *et seq.*), with that determination.

Proposed Action/Action Area: The action is described in your letter and in the June 2012 Draft Environmental Impact Statement (DEIS) for the proposed project (USAF 2012). In summary, the USAF proposes to improve the existing airports and associated infrastructure at Saipan and Tinian in order to support modern cargo, tanker, and fighter aircraft that may be diverted from their primary airfields or that may be operated from those fields to support periodic exercises, and humanitarian assistance and disaster relief operations. There would be no in-water work, and no expected increase in shipping to support construction or implementation of the proposed action. During the construction phase, upland construction and repair work would be completed to ensure that both airports can support expected operations. Runways and parking aprons would be extended and strengthened as needed, hangars and storage facilities for fuel and munitions would be improved or constructed. During the implementation phase, increased aircraft operations are expected to occur at these airports over a maximum cumulative total of 8 weeks annually. The action area for this project is estimated to be the in-water area in line with and directly beneath the approach and departure paths of the aircraft operating out of these fields, up to about 1 mile from the shore line.

Listed Species/Critical Habitat: The USAF has determined that following ESA-listed species under NMFS jurisdiction, may be affected by the proposed action: green sea turtles (*Chelonia mydas*), hawksbill sea turtles (*Eretmochelys imbricata*), leatherback sea turtles (*Dermochelys*



coriacea), olive ridley sea turtles (*Lepidochelys olivacea*), blue whales (*Balaenoptera musculus*), fin whales (*Balaenoptera physalus*), humpback whales (*Megaptera novaeangliae*), sei whales (*Balaenoptera borealis*), and sperm whales (*Physeter macrocephalus*). Detailed information about the biology, habitat, and conservation status of sea turtles and marine mammals can be found in their recovery plans and other sources at <http://www.nmfs.noaa.gov/pr/species/turtles/> and <http://www.nmfs.noaa.gov/pr/species/mammals/>.

Critical Habitat: There is no designated critical habitat for any listed marine species within or adjacent to the action area. Therefore, this project will have no effect on designated critical habitat.

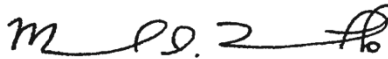
Analysis of Effects: In order to determine that a proposed action is not likely to adversely affect listed species, NMFS must find that the effects of the proposed action are expected to be insignificant, discountable, or beneficial as defined in the joint USFWS-NMFS Endangered Species Consultation Handbook: (1) insignificant effects relate to the size of the impact and should never reach the scale where take occurs; (2) discountable effects are those that are extremely unlikely to occur; and (3) beneficial effects are positive effects without any adverse effects (USFWS & NMFS 1998). This standard, as well as consideration of the probable duration, frequency, and severity of potential interactions, was applied during the analysis of effects of the proposed action on ESA-listed marine species, as is described in the USAF consultation request letter. In the letter, the USAF determined that related construction shipping would have no impact, and that exposure to elevated noise and increased lighting would result in insignificant effects on ESA-listed marine mammals and sea turtles. Based on the description of the proposed action and on the best information available to describe the behaviors and biological needs of the species considered here, NMFS agrees with the USAF that the proposed action would have insignificant impacts, or the likelihood of impacts would be discountable, for the marine species considered in this consultation.

Conclusion: NMFS concurs with your determination that implementation of Divert Activities and Exercises at the Saipan and Tinian International Airports, in the Commonwealth of the Northern Mariana Islands is not likely to adversely affect ESA-listed marine species or their designated critical habitat. Our concurrence is based on the finding that the effects of the proposed action are expected to be insignificant, discountable, or beneficial as defined in the joint USFWS-NMFS Endangered Species Consultation Handbook and summarized at the beginning of the Analysis of Effects section above. This concludes your consultation responsibilities under the ESA for species under NMFS's jurisdiction. However, this consultation focused solely on compliance with the ESA. Additional compliance review that may be required of NMFS for this action (such as assessing impacts on Essential Fish Habitat) would be completed by NMFS Habitat Conservation Division in separate communication, if applicable.

ESA Consultation must be reinitiated if: 1) a take occurs; 2) new information reveals effects of the action that may affect listed species or designated critical habitat in a manner or to an extent not previously considered; 3) the identified action is subsequently modified in a manner causing effects to listed species or designated critical habitat not previously considered; or 4) a new species is listed or critical habitat designated that may be affected by the identified action.

If you have further questions please contact Donald Hubner on my staff at (808) 944-2233. Thank you for working with NMFS to protect our nation's living marine resources.

Sincerely,

A handwritten signature in black ink, appearing to read "M. D. Tosatto", with a stylized flourish at the end.

Michael D. Tosatto
Regional Administrator

Cc: Patrice Ashfield, ESA Section 7 Program Coordinator, USFWS, Honolulu
Tony Montgomery, Coastal Conservation, USFWS, Honolulu

PIRO Reference No.: I-PI-12-1035-LVA

Literature Cited

Department of the Air Force (USAF). 2012. Draft Environmental Impact Statement for Divert Activities and Exercises, Guam and Commonwealth of the Northern Mariana Islands. June 2012.

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Endangered Species Consultation Handbook. Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act.
http://www.nmfs.noaa.gov/pr/pdfs/laws/esa_section7_handbook.pdf

**USAF Letter to NMFS Requesting Concurrence with the Not Likely to
Adversely to Affect Determination for Listed Corals,
January 2016**



DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

22 January, 2016

MEMORANDUM FOR NOAA FISHERIES PACIFIC ISLANDS REGIONAL OFFICE
MS. ANN GARRETT
ASSISTANT REGIONAL ADMINISTRATOR
1845 WASP BLVD, BUILDING 176
HONOLULU, HI 96818-2396

FROM: AFCEC/CFPE
25 E ST, STE C-200
JBPH-H. HI 96853-5420

SUBJECT: Request for Concurrence that Developing Divert Capabilities and Conducting Divert Activities and Exercises on Saipan and Tinian, Commonwealth of Northern Mariana Islands (CNMI) May Affect, but is Not Likely to Adversely Affect, Threatened Coral Species

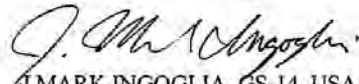
1. The U.S. Air Force (USAF) respectfully requests concurrence from the National Marine Fisheries Service (NMFS) on the determination that developing facilities and conducting divert activities and exercises at the Saipan and Tinian International Airports, and Saipan and Tinian seaports in the CNMI ("Divert project") may affect, but is not likely to adversely affect, the four following marine coral species: *Acropora globiceps*, *A. retusa*, *Pavona diffluens*, and *Seriatopora aculeata*.

2. On October 3, 2012, the USAF requested concurrence on the determination that the Divert project may affect, but is not likely to adversely affect, the following nine marine species: green sea turtle (*Chelonia mydas*), hawksbill sea turtle (*Eretmochelys imbricate*), leatherback sea turtle (*Dermochelys coricea*), olive ridley sea turtle (*Lepidochelys olivacea*), blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), sei whale (*Balaenoptera borealis*), and sperm whale (*Physeter macrocephalus*). The USAF received concurrence with this determination on October 30, 2012 (PIRO Reference No.: I-PI-12-1035-LVA).

3. Since the USAF received concurrence from NMFS in October 2012 for the Divert project, twenty species of coral were listed as threatened on November 13, 2014. Four of these have the potential to occur in the nearshore waters of CNMI, *Acropora globiceps*, *A. retusa*, *Pavona diffluens*, and *Seriatopora aculeata*. To comply with Section 7(a)(2) of the ESA, the USAF has analyzed potential effects of the proposed Divert project on these species. The attached memo summarizes the conclusions of the analysis that the Divert project on Saipan and Tinian may affect, but is not likely to adversely affect, *Acropora globiceps*, *A. retusa*, *Pavona diffluens*, and *Seriatopora aculeata*.

4. In accordance with 50 CFR 402.13, the USAF requests concurrence from NMFS that developing divert capabilities and conducting divert activities and exercises on Saipan and Tinian may affect, but is not likely to adversely affect any threatened coral species that occur offshore of those islands.

5. Should you have any questions or require additional information, please contact Mr. William Grannis (808)449-4049 or william.grannis@us.af.mil.


J MARK INGOGLIA, GS-14, USAF
Chief, Environmental and Real Property Branch
Air Force Civil Engineer Center

Attachment:

Assessment of Potential Effects on Threatened Coral Species from Developing Divert Capabilities and Conducting Activities and Exercises on Saipan and Tinian, Commonwealth of the Northern Mariana Islands (CNMI)

cc:

Pat Opay, ESA Section 7 Program Coordinator,
Joel Moribe, NMFS

Attachment: Assessment of Potential Effects on Threatened Coral Species from Developing Divert Capabilities and Conducting Activities and Exercises on Saipan and Tinian, Commonwealth of the Northern Mariana Islands (CNMI)

The U.S. Air Force (USAF) is proposing to improve the existing commercial airports at Saipan International Airport and Tinian International Airport and conduct from those airports periodic divert landings, joint military exercises, and humanitarian assistance and disaster relief efforts ("Divert project"). A *Draft Environmental Impact Statement (EIS) for Divert Activities and Exercises, Guam and Commonwealth of the Northern Mariana Islands* (USAF 2012) and was prepared and consultation as required by Section 7 of the Endangered Species Act (ESA) was completed for proposed activities described in the Draft EIS (PIRO Reference No.: I-PI-12-1035-LVA).

Since completion of the Draft EIS and Section 7 consultation, the USAF revised their proposed plans as a part of the National Environmental Policy Act process and developed modified alternatives. The modified alternatives were presented in the *Revised Draft Environmental Impact Statement (EIS) for Divert Activities and Exercises, Commonwealth of the Northern Mariana Islands* (USAF 2015) and are considered modified from those originally presented in the June 2012 Draft EIS. Despite modifications to the alternatives, the Proposed Action remains the same as that presented in the 2012 Draft EIS and is to improve an existing airport or airports and associated infrastructure in support of expanding mission requirements and to achieve divert capabilities in the western Pacific. Under this action, the USAF proposes to construct facilities and infrastructure at an existing airport or airports and associated seaport to support a combination of cargo, tanker, and similar aircraft and associated support personnel for divert operations, periodic exercises, and humanitarian assistance and disaster relief.

This assessment summarizes the USAF conclusions about the potential effects that the Proposed Action could have on coral species that were listed after completion of Section 7 consultation in October 2012.

Proposed Activities on Saipan

On Saipan, the USAF proposes to improve Saipan International Airport to accommodate 12 KC-135 or similar aircraft as shown in Figure 1. The USAF would build one parking apron, one cargo pad, one maintenance facility, fuel tanks and supporting infrastructure, and a fuel hydrant system including a hydrant fuel pipeline from the hydrant system to the parking apron. The parking apron would be able to accommodate six KC-135 and the cargo pad could accommodate up to three KC-135. During an emergency, three additional KC-135 could be accommodated at the existing commercial terminal in accordance with FAA Airport Sponsor Assurance C. 27. However, the USAF would not utilize this capability during a standard divert exercise. Construction would include necessary fencing and utilities. Construction would also include the transport of construction materials to the airport. It is assumed that construction would occur over 3 years.

At the Port of Saipan, the USAF would construct fuel tanks. To transfer fuel to the storage tanks at the airport, standard fuel transfer tank trucks would be used.

The USAF estimates that approximately 720 operations (i.e., 360 take-offs and 360 landings) by KC-135 or similar aircraft would be completed annually at Saipan International Airport. Temporary lodging would be required for up to 265 personnel on Saipan that would support aircraft operations during a divert operation, humanitarian assistance, or military exercise event.



Figure 1. Location of Proposed Facilities on Saipan.

Proposed Activities on Tinian

On Tinian, the USAF proposes to improve Tinian International Airport to accommodate 12 KC-135 or similar aircraft as shown in Figure 2. The USAF would construct infrastructure on either the north or south side of the runway. For the North Option, all construction would be on the north side of the runway. For the South Option, all construction would be on the south side of the runway.

North Option Only. On only the north side of the runway, the USAF would build taxiways to connect the cargo and parking aprons to the runway and reroute 8th Avenue on the western side of the runway to avoid the proposed taxiway.

North and South Options. Construction on both the north and south sides would include one parking apron, one cargo pad, one maintenance facility, fuel tanks and supporting infrastructure, a fuel hydrant system, a fire suppression system (containing water only), and an access road. The USAF would construct fuel tanks at the Port of Saipan.

Construction would include necessary fencing and utilities. Construction would also include the transport of construction materials to the airport. It is assumed that construction would occur over 3 years.

At the Port of Tinian, the USAF would construct fuel tanks. To transfer fuel to the storage tanks at the airport, standard fuel transfer tank trucks would be used.

The USAF estimates that approximately 720 operations (i.e., 360 take-offs and 360 landings) by KC-135 or similar aircraft would be completed annually at Tinian International Airport. Temporary lodging would be required for up to 265 personnel on Tinian that would support aircraft operations during a divert operation, humanitarian assistance, or military exercise event.

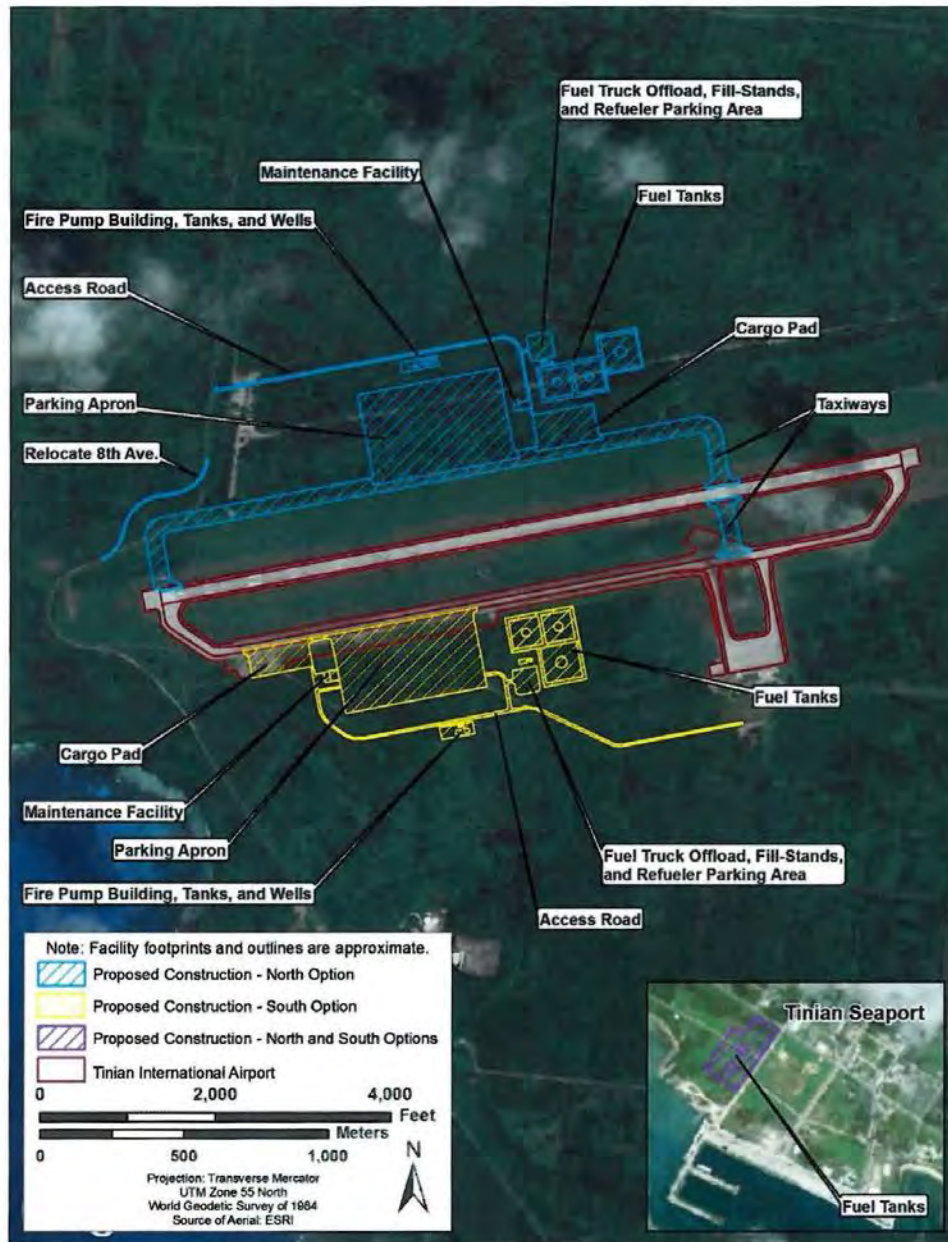


Figure 2. Location of Proposed Facilities on Tinian.

Potential Effects to Threatened and Endangered Species

On November 13, 2014, twenty species of coral were listed as threatened under the Endangered Species Act (ESA). Four of these have the potential to occur in the nearshore waters of CNMI, *Acropora globiceps*, *A. retusa*, *Pavona diffluens*, and *Seriatopora aculeata*. Colonies of *Acropora globiceps* occur in the intertidal zone, upper reef slopes, and reef flats in water shallower than 26 feet (8 meters) (DON 2015). *Acropora retusa* colonies are generally found on shallow reef slopes; back-reef areas, including upper reef slopes reef flats; and shallow lagoons occurring at water depths of 1 to 15 feet (0.3 to 5 meters) (NMFS 2014). *Seriatopora aculeata* is found in shallow reef environments in waters 10 to 130 feet (3 to 40 meters) deep (DON 2015) and occurs around Australia, Fiji, Indonesia, Japan, Papua New Guinea, and Madagascar to the Marshall Islands. Guam and the Northern Marianas are also included in the *Seriatopora aculeata* range (NMFS 2014). *Pavona diffluens* are found in upper reef slopes, mid-slopes, lower reef crests, reef flats, and lagoons (NMFS 2014) in water depths from 16 to 67 feet (5 to 20 meters) (DON 2015a). This species is found in the Red Sea and Arabian Gulf, as well as the Northern Marianas and America Samoa, but is uncommon near Saipan and Tinian (NMFS 2014).

Although threatened species of coral occur in the waters of Saipan and Tinian, the Divert project will not cause direct impacts to these species and indirect impacts are expected to be negligible. No construction or other activities will occur in the nearshore marine waters surrounding Saipan or Tinian. The USAF does not propose to increase the number of fuel tanker trips to the Saipan or Tinian harbors or to improve either harbor.

Stormwater and Runoff. To avoid or minimize indirect adverse impacts on ESA-listed corals from the release of sediment and stormwater, the USAF would fully comply with federal and local laws and regulations.

Stormwater discharge is regulated under the Clean Water Act (CWA) of 1972 and subsequent amendments. CWA addresses control of pollutants to the water of the United States by way of permit issued under the National Pollutant Discharge Elimination System (NPDES). The NPDES permit requires a regulated facility to prepare a facility-specific Stormwater Pollution Prevention Plan (SWPPP) which includes the best available preventive measures and practices to control or eliminate pollution. All NPDES permits are written to ensure the receiving waters will achieve Water Quality Standards are necessary to protect the public and ensure that beneficial uses (farming, horticulture, irrigation, special biological significance, commercial or recreational collection of fish, shellfish and other organisms, etc.) are attained.

An NPDES permit (General Permit for Storm Water Discharges from Construction Activities) is also required for discharges from construction activities that disturb one or more acres, and discharges from smaller sites that are part of a larger common plan of development or sale. Construction storm water permits include effluent limits for erosion and sediment control, pollution prevention, and site stabilization. The U.S. Environmental Protection Agency (EPA) delegates the NPDES permitting authority to most states. In the US Pacific Island territories, however, the US EPA Region 9 is the permitting authority and NOAA, as a natural Resources Trustee, would work closely with USAF and EPA to ensure resources are appropriately protected.

To satisfy the stormwater NPDES permit requirements, a list of specific items is stated in the SWPPP that must be followed in earnest. These include:

- **Site Map:** The site map must identify the drainage areas and discharge points as well as industrial activities that may impact stormwater.

- **Inventory of Materials:** The inventory of materials must list all of the types of materials handled at the site that can be exposed to precipitation or run-off.
- **Source Control Best Management Practice (BMP):** The SWPPP must include a list of the physical, structural, and mechanical devices or facilities intended to prevent pollutants from entering stormwater. These BMPs may include channeling and berming to maintain separation of stormwater and process water (wastewater). The permit specifically requires BMPs for Fueling Stations, Aircraft/Vehicle/Equipment Washing and Steam Cleaning, Loading and Unloading Liquid Materials, Liquid Storage in Above Ground Tanks, Container Storage of Liquids, Food Wastes or Dangerous Wastes, and Outside Storage of Raw Materials.
- **Stormwater Treatment:** If operational and source control BMPs are not sufficient to prevent contamination of stormwater, treatment may be necessary. Treatment BMPs may include: oil/water separators, bio-filtration, infiltration basins, detention facilities, and constructed wetlands.
- **Monitoring Plan:** Monitoring for various parameters at potential pollution sources and outfalls (discharge points) may be accomplished during rain events on a regular basis.
- **Inspections:** There must be at least one wet season inspection and one dry season inspection. The primary purpose of the wet season inspection is to determine how well all SWPPP BMPs are working when exposed to a major storm event. The primary purpose of the dry season inspection is to inspect the stormwater drainage system for the presence of non-stormwater discharges.

In addition to the NPDES permit, USEPA General Permit for Storm Water Discharges from Construction Activities, and associated SWPPP, the USAF would follow all Federal and CNMI permitting processes and regulations (e.g., CNMI Department of Environmental Quality (DEQ) Earthmoving and Erosion Control Regulations and permit; Energy Independence and Security Act (EISA) Section 438 Storm Water Requirements; CNMI DEQ/Guam Environmental Protection Agency (GEPA) Stormwater Management Manual). Lastly, the USAF would also develop an erosion and sediment control plan (ESCP). The ESCP will be developed per the Northern Mariana Islands Earthmoving and Erosion Control Regulations.

The implementation of erosion and sediment control measures and compliance with stormwater permitting processes during and after construction will prevent or minimize indirect impacts of sedimentation and stormwater runoff on nearshore coral species habitat, resulting in insignificant indirect impact on federally listed coral species.

Spill Control. To reduce the likelihood of spills or spill migration to nearshore waters during construction and during military exercises, all proposed fuels infrastructure on Saipan and Tinian would be constructed according to the most stringent applicable Federal and CNMI requirements. Specifically:

- **Design/Construction.** American Petroleum Institute Method 650 (API 650) establishes minimum requirements for material, design, fabrication, erection and inspection for vertical, horizontal, aboveground welded petroleum, oil, and lubricants (POL) storage tanks in various sizes and capacities for internal pressure approximating atmospheric pressure that have a maximum temperature of 200 degrees Fahrenheit. Construction will follow design calculations that conform to API 650. Calculations include seismic, internal and external pressures, and wind loading.
- **Tank Integrity Testing.** Procedures will be followed for the periodic integrity testing of all aboveground storage tanks, including visual inspection and where deemed appropriate, another form of nondestructive testing. The frequency and type of inspection and testing will take into account container size and design (floating/fixed roof, skid-mounted, elevated, cut-and cover, partially buried, vaulted above-ground, etc.) and industry standards.

- Secondary Containment. POL storage tanks will be provided with a secondary means of containment, such as a dike capable of holding the entire contents plus 10% freeboard to allow for precipitation and expansion of product. Permeability for containment areas will be a maximum of 10-7 cm/sec. (This is the permeability of compacted clay – a 1-meter layer of this will not let a liquid pass-through in 200 years). Drainage of storm water from containment areas will be controlled by a valve that is locked closed when not in active use. Storm water will be inspected for petroleum sheen before being drained from containment areas. If petroleum sheen is observed it will be collected with sorbent materials prior to drainage.
- Valves and Piping. All aboveground valves, piping, and appurtenances associated with POL storage tanks will be periodically inspected in accordance with API 570 which is the recognized industry standards. Buried piping will be tested for integrity and leaks at the time of installation, modification, construction, relocation, or replacement
- Loading/Unloading. Loading/unloading racks shall be designed to handle discharges of at least the maximum capacity of any single compartment of a tank truck loaded or unloaded at the loading/unloading rack. There will be appropriate containment and/or diversionary structures (dikes, berms, culverts, spill diversion ponds, etc.) or equipment (sorbent materials, weirs, booms, other barriers, etc.) at loading/unloading areas to prevent a discharge of POL, which reasonably could be expected to cause a sheen on waters of the US.
- Departing Vehicle Warning Systems. Design/construct means to provide an interlocked warning light or physical barrier system, warning signs, wheel chocks, or vehicle break interlock system at loading/unloading racks to prevent vehicles from departing before complete disconnection of flexible or fixed oil transfer lines.
- Personnel Training. All personnel handling POL will be trained annually in the operation and maintenance of equipment to prevent discharges; discharge procedure protocols; general facility operations.

The potential for contamination from the unlikely event of a spill would be reduced through implementation of an Spill Prevention Control and Countermeasures (SPCC) Plan (as required by Section 311(j)(1)(C) of the Clean Water Act as amended by the Oil Pollution Act of 1990) and all fuel tanks at the Saipan and Tinian airport and seaport will include secondary containment to eliminate the potential for spills that could ultimately find their way into nearshore waters. The SPCC Plan will be prepared, maintained, and implemented and provides for the prevention, control, counteract, and reporting of all spills. The plan provides measures to prevent, and to the maximum extent practicable, to remove a worst case discharge from the facility. The plan will be certified by an appropriately licensed or certified technical authority ensuring that the plan considers applicable industry standards for spill prevention and environmental protection, that the plan is prepared in accordance with good engineering practice and is adequate for the facility.

- Prevention Section. The prevention section of the plan will contain the information on the installation including name, type or function, location and address, charts of drainage patterns, designated water protection areas, maps showing locations of various facilities which store, handle, and transfer that could possibly produce a significant spill, critical water resources, land uses, and possible migration pathways using maps as appropriate, to prediction of direction and rate of flow, as well as the total quantity of substances that might be spilled as a result of a major failure.
- Arrangements for Emergency Services. The plan will describe arrangements with installation and/or local police departments, fire departments, hospitals, contractors, and emergency response teams to coordinate emergency services. The plan will include a list of all emergency equipment, such as fire

extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment, at each site where this equipment is required; an evacuation plan and a designated meeting place.

- Spill Control Section. The control section of the plan will identify resources for cleaning up spills at installations and activities, and to provide assistance to other agencies when requested. This section of the plan will contain a prioritized list of various critical water and natural resources that will be protected in the event of a spill. The plan will identify other resources addressed in prearranged agreements that are available to cleanup or reclaim a large spill, if such spill exceeds the response capability of the installation: a Facility Response Plan.

Furthermore, per the Oil Pollution Act of 1990 which amended the Clean Water Act, the USAF is required to have a Facility Response Plan (FRP) for accidental "catastrophic" spill. The FRP pulls the resources of all industrial activities (the Tinian International Airport, for example) and the US Coast Guard together to handle an incident of the scale beyond any single individual facility's capability to respond. The USAF also maintains all petroleum equipment in good functioning order, including regular testing and checking for any failure. This greatly adds to the effectiveness of spill prevention control and countermeasures. It should also be noted that USAF instructions require a full time onsite presence of personnel to inspect and maintain the tanks and POL infrastructure. Those same personnel will also provide onsite USAF spill planning preparedness and response capability thereby potentially upgrading island wide capability for spill response through cooperative spill response agreements that could be developed

Additionally, the USAF follows Technical Order (TO) 37-1-1, General Operations and Inspection of Installed Fuel Storage and Dispensing Systems. The TO outlines general operational information associated with fuel storage and dispensing systems and provides the minimum periodic operator's maintenance and inspection criteria requirements. The TO is used by fuels management personnel in the operation, inspection, and operator maintenance of permanently installed fuel facilities.

Lastly, as described in the analysis of potential stormwater and runoff, construction and implementation of the Divert project would also follow the guidelines provided in Federal and CNMI permitting processes and regulations (e.g., USEPA Construction General Permit, CNMI DEQ Earthmoving and Erosion Control Regulations and permit, EISA Section 438, the CNMI DEQ Stormwater Management Manual, and the site-specific SWPPP and ESCP.)

Based on the description of spill control and prevention measures described above, the possibility of a release of fuel or other contaminants from proposed fuel infrastructure and transfer on Saipan and Tinian to the nearshore marine environment is discountable, and if one were to occur, the amount released into the nearshore marine environment would be small and the effects to coral would be insignificant.

Therefore, because developing divert capabilities and conducting divert activities and exercises on Saipan and Tinian would have discountable or insignificant indirect impact on coral species, the USAF has determined that the Divert project may affect, but is not is not likely to adversely affect any threatened coral species that occur offshore of those islands. Based on a review of recent information on corals in the Mariana Islands (Veron 2014, Tetra Tech 2014, DON 2015) the following threatened coral species are most likely to offshore of Saipan and Tinian:

- *Acropora globiceps*
- *Acropora retusa*
- *Pavona diffluens*
- *Seriatopora aculeata*

References

- DON 2015 Department of Navy (DON). 2015. Commonwealth of the Northern Mariana Islands Joint Military Training Draft Environmental Impact Statement/Overseas Environmental Impact Statement. April 2015.
- NMFS 2014 National Marine Fisheries Service. 2014. Endangered and Threatened Wildlife and Plants: Final Listing Determinations on Proposal To List 66 Reef-Building Coral Species and To Reclassify Elkhorn and Staghorn Corals. Available online: <<https://www.federalregister.gov/articles/2014/09/10/2014-20814/endangered-and-threatened-wildlife-and-plants-final-listing-determinations-on-proposal-to-list-66>>. Accessed January 12, 2016.
- Tetra Tech 2014 Tetra Tech. 2014. Final Coral Marine Resources Survey Report in Support of the Commonwealth of the Northern Mariana Islands Joint Military Training Environmental Impact Statement/Overseas Environmental Impact Statement. Prepared for the Department of the Navy, Naval Facilities Engineering Command, Pacific, Honolulu, Hawaii.
- USAF 2012 U.S. Air Force (USAF). 2012. Draft Environmental Impact Statement for Divert Activities and Exercises, Guam and Commonwealth of the Northern Mariana Islands (CNMI). Pacific Air Forces, Joint Base Pearl Harbor-Hickam, Hawaii. July 2012.
- USAF 2015 Revised Draft Environmental Impact Statement for Divert Activities and Exercises, CNMI Pacific Air Forces, Joint Base Pearl Harbor-Hickam, Hawaii. October 2015
- Veron 2014 Veron, J. E. N. (2014). *Results of an Update of the Corals of the World Information Base for the Listing Determination of 66 Coral Species under the Endangered Species Act*. Honolulu, HI: Western Pacific Regional Fishery Management Council. Available online: http://www.nmfs.noaa.gov/pr/pdfs/species/corals_veron_report2014.pdf Accessed January 18, 2016

THIS PAGE INTENTIONALLY LEFT BLANK

**NMFS Letter to USAF Concurring with the Not Likely to
Adversely to Affect Determination for Listed Corals and the Scalloped Hammerhead Shark,
March 2016**



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Regional Office
1845 Wasp Blvd., Bldg 176
Honolulu, Hawaii 96818
(808) 725-5000 • Fax: (808) 725-5215

MAR 28 2016

J. Mark Ingoglia
Chief, Environmental and Real Property Branch
AFCEC/CFPE
25 E Street, Suite C-200
Joint Base Pearl Harbor-Hickam, HI 96853-5420

Dear Mr. Ingoglia:

This letter responds to your January 22, 2016 letter regarding reinitiation of consultation on your Divert project. In the letter, the U.S. Air Force (USAF) determined that the proposed build-out and operations from the Divert project is not likely to adversely affect (NLAA) newly listed endangered or threatened species under our jurisdiction, and requested our concurrence under section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. §1531 *et seq.*), with that determination.

Consultation History

On October 30, 2012, NMFS concurred with the USAF that the proposed Divert project may affect but is not likely to adversely affect green sea turtles (*Chelonia mydas*), hawksbill sea turtles (*Eretmochelys imbricata*), leatherback sea turtles (*Dermochelys coriacea*), olive ridley sea turtles (*Lepidochelys olivacea*), blue whales (*Balaenoptera musculus*), fin whales (*Balaenoptera physalus*), humpback whales (*Megaptera novaeangliae*), sei whales (*Balaenoptera borealis*), and sperm whales (*Physeter macrocephalus*) (PIR-2012-9144). The USAF is only requesting reinitiation of consultation on species that were listed after the October 30, 2012, consultation, and is not changing the action. The analysis of effects of the proposed action on the species included in the 2012 consultation and the related conclusions of that consultation remain accurate, and these species will not be addressed further in this consultation.

On February 23, 2016 we requested, and on March 10, 2016, we received additional information from the USAF on storm water treatment, and the containment and control measures for the proposed increase in hazardous materials being stored in the action area (USAF 2016).

Proposed Action

In summary, the USAF proposes to improve the existing airfield at the Tinian International Airport and Tinian seaport to accommodate joint military cargo, tanker, and fighter aircraft that may be diverted from their primary airfields or that may be operated from those fields to support



periodic exercises, and humanitarian and disaster relief assistance. The USAF will also conduct military aircraft training at the runway when the airfield at Anderson AFB is not available.

The USAF will construct a parking apron, cargo pad, taxiway, maintenance facility, access road, jet fuel receiving, storage and distribution infrastructure, fire suppression system, fencing, and utilities. The USAF will also reroute an existing road. In total, the USAF will add up to 98 acres of new impervious surfaces to the action area, but could add less than that total. There is an abandoned airstrip of unknown size where some of the new facilities are being proposed. The USAF may remove the existing impervious surfaces to place new ones, or the new facilities may be built on the existing impervious surfaces, resulting in no net gain for portions of the project. The USAF will also incorporate low impact development measures into their designs to reduce their impact on the action area and the surrounding environment.

The action area has highly infiltratable soil and land, which the USAF will use to contain and treat runoff on site. The USAF proposes to build a series of berms and swales to contain runoff and maximize infiltration. The USAF is designing stormwater treatment facilities to accommodate the volume and peak discharge flows of approximately 18 acre-feet, which is based on 2.2 inches of precipitation per year or at least the 95th percentile storm, based on the 24-hour precipitation depth average over a minimum of 10 years. This design is intended to maintain predevelopment hydrology and prevent net increase in stormwater runoff.

The USAF will prevent fuel from leaving the site and into marine waters where it could affect listed marine species. The USAF will implement a Spill Prevention Control and Countermeasures Plan, and build fuel tanks and secondary containment to hold up to 110% capacity of tanks, to prevent spillage off site. The USAF will also implement a strict inspection and monitoring system which includes daily inspections, and effective and proactive recurring maintenance.

Action Area

The action area for this project includes areas affected by Divert exercises. The action area for the October 30, 2012 consultation was based on noise from aircrafts, which were estimated to be the in-water area in line with and directly beneath the approach and departure paths of the aircraft operating out of these fields, up to about one mile from the shoreline. We expect the action area for this reinitiation of consultation to be identical to the action area analyzed in the 2012 consultation. We have no information to suggest that listed corals or scalloped hammerhead sharks have greater capabilities to hear airborne noises than sea turtles and marine mammals, and do not expect the action area to extend beyond what is expected for the sea turtles and marine mammal species previously consulted on.

Listed Species

The USAF determined that four ESA-listed threatened and endangered species under NMFS jurisdiction were listed since the 2012 consultation and may be affected by the proposed action. These species are listed in Table 1 and are known to occur, or could reasonably be expected to occur, in waters off the island of Tinian and may be present in the action area at the time of the proposed action.

Table 1. Scientific name, ESA status, listing date, and Federal Register reference for listed species

considered in this reinitiation of consultation.

Species	Scientific Name	ESA Status	Listing Date	Federal Register Reference
Coral, no common name	<i>Acropora globiceps</i>	Threatened	10/10/2014	79 FR 53851
Coral, no common name	<i>Acropora retusa</i>	Threatened	10/10/2014	79 FR 53851
Coral, no common name	<i>Seriatopora aculeata</i>	Threatened	10/10/2014	79 FR 53851
Scalloped hammerhead shark, Indo-West Pacific Distinct Population Segment	<i>Sphyrna lewini</i>	Threatened	09/02/2014	79 FR 38213

Detailed information describing the biology, habitat, and conservation status for corals can be found in the recovery plans and other sources at http://www.fpir.noaa.gov/PRD/prd_coral.html, and for the scalloped hammerhead shark at http://www.fpir.noaa.gov/PRD/prd_scalloped_hammerhead_shark.html.

Analysis of Effects

In order to determine that a proposed action is NLAA listed species, NMFS must find that the effects of the proposed action are expected to be insignificant, discountable, or beneficial as defined in the joint USFWS-NMFS Endangered Species Consultation Handbook: (1) insignificant effects relate to the size of the impact and should never reach the scale where take occurs; (2) discountable effects are those that are extremely unlikely to occur; and (3) beneficial effects are positive effects without any adverse effects (USFWS & NMFS 1998). This standard, as well as consideration of the probable duration, frequency, and severity of potential exposures to hazardous materials, was applied during the analysis of effects of the proposed action on ESA-listed marine species, as is described in detail in the USAF consultation request.

The October 30, 2012, consultation addressed increased aircraft operations, noise, shipping, lighting, and construction impacts on listed sea turtle and marine mammal species. The listed corals and scalloped hammerhead sharks may be exposed to increased aircraft operations and airborne noise. The USAF anticipates an increase of aircraft activity for 8 weeks per year, and an estimated 720 operations (360 take-offs and 360 landings). The noise created by aircraft are not likely to be at levels that would be detected by corals, or harmful to scalloped hammerhead sharks. The USAF is installing lights at their new facilities that are designed to minimize their impact on wildlife, and are far from marine waters. We concur with you that the effects associated with increased aircraft activity, noise, and lighting are insignificant or discountable. There will be some shipping associated with construction of the facilities, taxi ways, fuel tanks, and fueling. However, there will be little increase in shipping as a result of operations after the facilities at the existing airport and seaport is built. We concur that the effects associated with shipping of materials to construct the facilities will have insignificant effects on the listed corals and scalloped hammerhead shark.

The USAF determined that the risk of marine resources being exposed to jet fuel or hazardous waste due to catastrophic spill is low. The USAF will implement a Spill Prevention Control, and Countermeasures Plan, and build fuel tanks and secondary containment to hold up to 110% capacity of tanks, to prevent spillage off site. The USAF will also implement a strict inspection and monitoring system which includes daily inspections, and effective and proactive recurring maintenance. The potential effects to listed species from impact by catastrophic spill due to

leaking, rupture, or spill is highly unlikely and we concur that such effects would be discountable.

The USAF determined that the addition of facilities, covering up to 98 acres of new impervious surface will have an insignificant effect on listed corals and scalloped hammerhead shark. After surveying the topography, geologic, and hydrologic properties of the soils, the USAF concluded that the buildout of the facilities will have an immeasurable impact on marine resources because the changes in runoff after buildout will be immeasurable. The highly infiltratable soils and land offers adequate infiltration and opportunities for bioswale treatment to remove suspended solids and pollutants from runoff being generated from the new impervious surfaces. The USAF is building a series of berms and swales which are designed to hold water from running off the site before it can be treated or infiltrated. The USAF are sizing the stormwater treatment features to treat up to 18 acre-feet of water generated from the runoff of the new impervious surfaces. This would treat the amount of water generated from the most common large storms where pollutants could be carried off site into waterways. Water generated from one source during larger storms is often buffered because water is running off and ponding everywhere, and addition to water quantity from the project would appear immeasurable. After the first precipitation and movement off the surfaces, when pollutant concentrations are the highest, water running off of impervious surfaces during higher precipitation levels or storm events appear immeasurable. We concur that the proposed stormwater treatment methods and sizes are adequate to treat runoff associated with the new impervious surfaces, and differences in water quality and water quantity of water entering marine waters where listed species are exposed will be immeasurable, and frequency, duration and intensity of stormwater flowing into marine waters are likely to be immeasurable as well. We concur that such effects from stormwater generated from the new facilities will be insignificant to listed corals, and scalloped hammerhead shark.

Based on consideration of the record as presented in the information and assessments in the USAF's consultation request and follow-up materials, and the best scientific information available about the biology and expected behaviors of the ESA-listed marine species considered in this consultation, NMFS concurs with 1) the list of ESA-listed species and potentially exposed to the effects of the action, 2) the suite of identified stressors, and 3) the USAF's assessment of exposure risk and significance of exposure to those stressors.

Conclusion

NMFS concurs with your determination that conducting the proposed Divert project is NLAA ESA-listed marine species. This concludes your consultation responsibilities for this action under the ESA for species under NMFS' jurisdiction. If necessary, consultation pursuant to Essential Fish Habitat would be completed by NMFS' Habitat Conservation Division in separate communication.

ESA Consultation must be reinitiated if: 1) take occurs; 2) new information reveals effects of the action that may affect listed species or designated critical habitat in a manner or to an extent not previously considered; 3) the identified action is subsequently modified in a manner causing effects to listed species or designated critical habitat not previously considered; or 4) a new species is listed or critical habitat designated that may be affected by the identified action.

If you have further questions please contact Joel Moribe on my staff at (808) 725-5142 or joel.moribe@noaa.gov. Thank you for working with NMFS to protect our nation's living marine resources.

Sincerely,



Ann M. Garrett
Assistant Regional Administrator

NMFS File No. (PCTS): PIR-2016-9800
PIRO Reference No.: I-PI-16-1364-AG

Literature Cited

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Endangered Species Consultation Handbook. Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act.
http://www.nmfs.noaa.gov/pr/pdfs/laws/esa_section7_handbook.pdf

U.S. Air Force Headquarters Pacific Air Forces (USAF). 2016. Supplemental Information Supporting USAF Informal Consultation: Effects of the Divert Project on Marine Coral and Scalloped Hammerhead Shark.

THIS PAGE INTENTIONALLY LEFT BLANK

**USAF Letter to NMFS Requesting Essential Fish Habitat Consultation,
March 2016**



**DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES**

March 28, 2016

MEMORANDUM FOR NOAA FISHERIES PACIFIC ISLANDS REGIONAL OFFICE
MR. GERALD W. DAVIS
ASSISTANT REGIONAL ADMINISTRATOR
HABITAT CONSERVATION DIVISION
1845 WASP BLVD, BUILDING 176
HONOLULU, HI 96818-2396

FROM: AFCEC/CFPE
25 E Street Ste C-200
JBPH-H HI 96853-5420

SUBJECT: Request for Essential Fish Habitat (EFH) Consultation with National Marine Fisheries Service (NMFS), Pacific Islands Regional Office, Habitat Conservation Division (PIRO HCD) for the *Divert Activities and Exercises, Commonwealth of Northern Mariana Islands (CNMI)*

1. The U.S. Air Force (USAF) appreciates NMFS PIRO HCD's (NMFS) interest and review of the October 18, 2015 Revised Draft Environmental Impact Statement (RDEIS) for Divert Activities and Exercises, Commonwealth of Northern Mariana Islands (CNMI) ("Divert project") provided in a letter dated November 24, 2015, and subsequent discussion detailed below. NMFS provided comments on the RDEIS in accordance with the Essential Fish Habitat (EFH) provision of Magnuson-Stevens Fishery Conservation and Management Act (MSA 50 C.F.R. §§ 600.905-930), the National Environmental Policy Act (NEPA 42 U.S.C. § 4321 et seq.), the Fish and Wildlife Coordination Act (FWCA 16 U.S.C. § 662(a)), Executive Order 13089, *Coral Reef Protection*, and the Clean Water Act (CWA 33 U.S.C. § 1251 et seq.).
2. The RDEIS stated that, no construction or activities during implementation would occur in the marine waters surrounding Saipan or Tinian and the project would be compliant with Federal and CNMI regulations to minimize erosion and sediment during construction, to manage stormwater runoff during and after construction, and to implement spill control during and after construction. Therefore, the RDEIS concluded that adverse indirect or direct impacts on EFH, coral species, and other nearshore resources would not be expected.
3. NMFS PIRO HCD's comments on the RDEIS requested additional information regarding spill control, storm water management, sedimentation and erosion Best Management Practices (BMPs) and clarification regarding cumulative usage impacts at Tinian harbor. The USAF and NMFS held a call on January 7, 2016 HST/January 8, 2016 ChST to discuss NMFS's comments and for NMFS to provide clarification on the additional information they were seeking. The USAF responded to NMFS's comments in an email dated January 20, 2016 with the requested additional information on spill control, storm water management, sedimentation and erosion BMPs and regulations and clarification on the potential uses of Tinian harbor.

4. NMFS responded with an email dated January 28, 2016, with a request for additional information on the volume and quality of stormwater runoff to “inform avoidance and minimization measures and then if necessary, any offset for unavoidable marine resource losses.”
5. The USAF and NMFS conducted a conference call on February 3, 2016 HST/February 4, 2016 ChST, in which the USAF indicated that a preferred location(s) had not been selected for construction, and detailed site design has not begun. Therefore, requested information on the volume and quality of stormwater runoff, generated by the project was not yet available. The agencies also discussed USAF’s “no adverse effect on EFH” determination, necessary project documentation to support USAF’s determination, the EFH consultation process, and USAF options for completing EFH consultation either during the NEPA phase or at the U.S. Army Corps of Engineers permit issuance phase. The USAF indicated their preference was to defer EFH consultation with NMFS following selection of the preferred alternative and during the project permit phase.
6. On February 10, 2016, the USAF officially selected the Modified Tinian-only alternative as the preferred alternative.
7. The USAF provided a February 12, 2016 memo that was received by NMFS on February 15, 2016. The memo provided an assessment of potential effects on EFH from Developing Divert Capabilities and Conducting Activities and Exercises on Saipan and Tinian and made a determination that “potential impacts from the Divert project will be negligible (i.e., not measureable) and will not reduce the quality and/or quantity of EFH. Therefore, per 50 CFR 600.810(a), no adverse effect on EFH would be expected and consultation is not required per 50 CFR 600.920(a).”
8. On March 1, 2016, NMFS informed USAF (via e-mail) of its prepared response letter to USAF’s February 15, 2016 memo. NMFS also requested to whom the letter would be addressed and information on USAF selection of the Tinian-only alternative.
9. On March 2, 2016, NMFS requested a March 15, 2016 call with USAF to discuss NMFS’ letter prior to issuance. On that same date, the USAF informed NMFS of plans to complete EFH consultation during the NEPA process via phone. During that phone conversation, USAF also informed NMFS that its analysis for EFH purposes was focused on the north Tinian airport construction alternative as it had the potential to generate the greatest amount of impermeable surface. Nevertheless, both the north and south Tinian locations remain under USAF consideration.
10. On March 5, 2016, USAF accepted NMFS’ request to discuss the project on March 15, 2016.
11. On March 7, 2016, USAF provided meeting logistics for this call. Based on subsequent discussions, it was understood by the USAF that NMFS still cannot agree with the USAF’s “no adverse effect” determination without prior review of supporting information to validate USAF’s determination. NMFS and USAF agreed to meet to discuss the matter further.

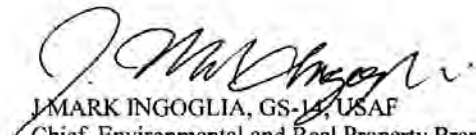
12. On March 14, 2016, in support of a meeting on March 15, 2016, the USAF e-mailed NMFS a document entitled "Supplemental Information supporting Determination for No Adverse Effect of the Divert project on Essential Fish Habitat" and power point slides highlighting noteworthy information from that document, which NMFS later acknowledged would serve as the USAF's EFH Assessment (EFHA). During the March 15, 2016 meeting, the USAF and NMFS discussed the supplemental information (hereinafter "EFHA") and next steps for completing EFH consultation during the NEPA phase. As discussed, NMFS recommended that the USAF's letter be revised to clarify and officially document recent changes in USAF's approach for completing EFH consultation during the NEPA phase and update the content of USAF's supplemental information.

13. On March 18, 2016, NMFS provided, via email, both comments on the EFHA and guidance on steps to complete EFH consultation. USAF greatly appreciates NMFS' timely response.

14. Based on the above discussions, the USAF has made a determination that adverse effect to EFH resulting from the Divert project will be none to minimal given the no net increase in use of Tinian harbor, established technologies for stormwater control/fuels managements, nature of the soils, programmed funding for implementation of controls and opportunity to revisit and partner with NMFS in adaptive management to ensure EFH is appropriately protected. The Final EIS will reflect this updated and informed determination.

15. Therefore, in accordance with 50 C.F.R. § 600.920(a), the USAF requests consultation with NMFS on our determination that adverse effects to EFH from the Divert project will be none to minimal.

16. Given our already extensive discussions, meetings, and exchange/review of our initial EFHA, and due to schedule limitations, any effort to expedite your review is greatly appreciated. We look forward to your review of our updated EFHA as well as our responses to your comments on our initial EFHA. Should you have any questions or require additional information, please contact Mr. William Grannis (808) 449-4049 or william.grannis@us.af.mil.


J. MARK INGOGLIA, GS-14, USAF
Chief, Environmental and Real Property Branch
Air Force Civil Engineer Center

2 Attachments:

1. Assessment of Potential Effects on Essential Fish Habitat from Developing Divert Capabilities and Conducting Activities and Exercises on Tinian, Commonwealth of the Northern Mariana Islands (CNMI)
2. USAF Responses to Comments (18 March 2016) from NMFS on the Supplemental Information Supporting Determination for No Adverse Effect of the Divert Project on Essential Fish Habitat

cc:

Steve McKagan, CNMI Field Office
Arlene Pangelinan

**ESSENTIAL FISH HABITAT ASSESSMENT
FOR DIVERT ACTIVITIES AND EXERCISES,
COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS**



**HEADQUARTERS PACIFIC AIR FORCES (HQ PACAF)
JOINT BASE PEARL HARBOR-HICKAM, HAWAI'I 96853-5233**

MARCH 2016

ABBREVIATIONS AND ACRONYMS

API	American Petroleum Institute
ATCT	air traffic control tower
bbl	barrel
BMP	best management practice
CFR	Code of Federal Regulations
cm/sec	centimeters per second
CNMI	Commonwealth of the Northern Mariana Islands
DOD	Department of Defense
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ETL	Engineering Technical Letter
FAA	Federal Aviation Administration
FRP	Facility Response Plan
ft ²	square feet
LID	low-impact development
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
PIRO HCD	Pacific Islands Regional Office Habitat Conservation Division
POL	petroleum, oil, and lubricants
SPCC	Spill Prevention Control and Countermeasures
SWPPP	Stormwater Pollution Prevention Plan
TSS	total suspended solids
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection Agency
WQ _v	water quality volume

This page intentionally left blank.

Table of Contents

1. Introduction	1-1
1.1 Coordination History	1-1
2. Project Description and Action Area	2-1
2.1 Planning and Construction Phase	2-2
2.1.1 Parking Apron	2-2
2.1.2 Cargo Pad	2-4
2.1.3 Taxiway	2-4
2.1.4 Maintenance Facility	2-4
2.1.5 Access Road and 8 th Avenue Reroute	2-4
2.1.6 Jet Fuel Receiving, Storage, and Distribution	2-4
2.1.7 Fire Suppression System	2-5
2.1.8 Fencing and Utilities	2-5
2.1.9 Stormwater Management Controls	2-5
2.2 Implementation Phase	2-5
2.2.1 Divert Landings Operations	2-6
2.2.2 Humanitarian Assistance Staging	2-6
2.2.3 Military Exercises	2-6
2.2.4 Jet Fuel Receiving, Storage, and Distribution	2-6
2.2.5 Lodging	2-7
2.3 Action Area	2-7
3. Minimization of Impacts to Water Quality	3-1
3.1 Stormwater Management	3-1
3.1.1 Facility Planning and Construction	3-1
3.1.2 After Construction	3-6
3.2 Summary of Stormwater Management Conceptual Design	3-10
3.3 Spill Prevention and Control	3-12
3.4 Water Quality Criteria	3-16
4. EFH in the Action Area	4-1
5. Existing Conditions and Environmental Baseline	5-1
5.1 Topography, Geology, and Soils	5-1
5.1.1 Regional Geology	5-1
5.1.2 Physiography and Topography	5-1
5.2 Land Use	5-3
5.3 Water Resources	5-3
5.4 Marine Environment	5-5
6. Analysis and Conclusions	6-1
6.1 Analysis	6-1
6.2 Conclusions	6-3
7. References	7-1

Figures

Figure 2-1. Proposed Construction on Tinian	2-3
Figure 2-2. Surface Water Outflow to the West of the Tinian International Airport.	2-8
Figure 3-1. Conceptual Site Design for Stormwater Management.....	3-13
Figure 5-1. Types of Subsurface Karst Development on Carbonate Islands (Stafford et al 2005).....	5-2
Figure 5-2. Tinian Surface Waters and Flood Zones (DON 2015)	5-6

Tables

Table 3-1. Structural Stormwater Management BMPs.....	3-9
Table 3-2. Assumptions and Conservative Estimates in the Conceptual Site Design	3-12
Table 3-3. 2014 CNMI Water Quality Standards	3-17
Table 4-1. Fishery Assemblages and Lifestages with EFH Designated in the Action Area	4-2
Table 5-1. Characteristics of Soils Mapped on Tinian.....	5-2

1. Introduction

This Assessment has been prepared by the U.S. Air Force (USAF) to evaluate the potential effects on Essential Fish Habitat (EFH) from developing facilities and conducting divert activities and exercises at the Tinian International Airport and Tinian seaport in the Commonwealth of the Northern Mariana Islands (CNMI) (“Divert project”). This Assessment documents the evaluation conducted by USAF to determine whether the Divert project would adversely affect EFH, and thus whether consultation with the National Marine Fisheries Service (NMFS) is necessary, as required by Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). To comply with the implementing regulations at 50 CFR 600.915 for preparation of an EFH Assessment, this document includes:

- A description of the USAF plan to develop facilities at the Tinian International Airport and seaport and conduct divert activities and exercises on that island (**Section 2**).
- A detailed description of the methods that will be used to avoid and minimize impacts to the coastal environment during construction and operation of facilities at the Tinian International Airport and seaport, including:
 - A description of the methods for stormwater management for the Divert project that the USAF will implement to comply with regulatory requirements and guidelines (**Sections 3.1 and 3.2**).
 - A list of the methods for the prevention and control of spills of hazardous materials for the Divert project that the USAF will implement to comply with regulatory requirements and guidelines (**Section 3.3**).
- A summary of the status of the EFH addressed in this report (**Section 4**).
- A summary of the baseline conditions at the Tinian airport and seaport where proposed construction and implementation will take place (**Section 5**).
- An analysis of the potential adverse effects of the Divert project on EFH and managed species and justification of conclusion reached by the USAF that the Divert project would have no to minimal adverse effects on EFH (**Section 6**).

1.1 Coordination History

The USAF has taken the following actions and had the following communications with the NMFS in accordance with the MSFCMA for protection of EFH.

- In July 2012, the USAF received a letter from the NMFS Pacific Islands Regional Office, Habitat Conservation Division (PIRO HCD) that offered comments on the USAF’s 2012 Draft Environmental Impact Statement (EIS) for Divert Activities and Exercises, with respect to EFH in accordance with the MSFCMA. NMFS PIRO HCD recommended that the USAF evaluate potential impacts on EFH associated with the proposed Divert action and determine whether consultation under MSFCMA was necessary.

- In October 2015, the USAF released the Revised Draft EIS for Divert Activities and Exercises. This document incorporated NMFS PIRO HCD's request for the USAF to evaluate potential impacts to EFH. The USAF's 2015 Revised Draft EIS stated that construction would not occur in the marine waters surrounding Saipan or Tinian and DOD policies, compliant with Federal and CNMI regulations, would be followed to minimize erosion and sedimentation during construction and to manage stormwater runoff after construction. By implementing those policies, sedimentation and runoff would be minor and indirect or direct impacts on EFH would not be expected from any aspect of the Proposed Action.
- In November 2015, NMFS provided comments on the 2015 Revised Draft EIS and NMFS highlighted three issues that, in the opinion of NMFS, may adversely affect EFH unless additional measures are taken: stormwater, spill control, and the condition and planned use of the Tinian harbor.
- In January 2016, the USAF and NMFS held a teleconference and the USAF provided additional information to NMFS regarding the Proposed Action and best management practices (BMPs), such as adherence to a Spill Prevention Control and Countermeasures (SPCC) Plan, Facility Response Plan (FRP), Erosion and Sediment Control Plan (ESCP), and Stormwater Pollution Prevention Plan (SWPPP). The USAF provided NMFS with initial responses to their comments and concerns on the project.
- Following that teleconference, the USAF provided NMFS with details in response to NMFS' comments regarding the USAF's proposed stormwater controls and spill prevention and control measures, and clarified that improvements are not proposed to the Tinian harbor. These comments were provided in an email dated 20 January 2016.
- NMFS responded to that email on 28 January 2016 and requested that the USAF provide additional information on volume and quality of stormwater runoff to "inform avoidance and minimization measures and then if necessary, any offset for unavoidable marine resources losses."
- On 3 February 2016, the USAF and NMFS held a teleconference in which the USAF indicated the location(s) of construction had yet to be determined, thus additional information, as requested by NMFS, was not yet available. The agencies also discussed USAF's "no adverse effect on EFH" determination, necessary project documentation to support USAF's determination, the EFH consultation process, and USAF options for completing EFH consultation either during the NEPA phase or at the U.S. Army Corps of Engineers permit issuance phase. The USAF opted to defer EFH consultation with NMFS following selection of the preferred alternative.
- On 10 February 2016, the Modified Tinian-only alternative was selected as the preferred alternative by the USAF. A follow-up call on 2 March 2016 informed NMFS that the USAF would conduct its analysis for EFH purposes for the "north location" due to its larger impermeable surface than the proposed "south location."

- On 12 February 2016, the USAF provided NMFS with a letter stating their determination that the Divert project would have no adverse effect on EFH. That letter was accompanied by an attachment that detailed the USAF's assessment of potential effects on EFH and their commitments to stormwater controls and spill prevention and control measures.
- On 2 March 2, 2016, NMFS requested a call with USAF to discuss NMFS' letter prior to issuance. On that same date, the USAF informed NMFS via phone of plans to complete EFH consultation during the NEPA process. During that phone conversation, USAF also informed NMFS that its analysis for EFH purposes was focused on the north Tinian airport construction alternative as it had the potential to generate the greatest amount of impermeable surface. During a subsequent conversation on 7 March, 2016, NMFS staff stated that they did not agree with the USFA's determination that the Divert project would have no adverse effect on EFH without prior review of supporting information to support the determination.
- On 14 March 2016, the USAF emailed a document to NMFS entitled "Supplemental Information Supporting Determination for No Adverse Effect of the Divert Project on Essential Fish Habitat" in support of a meeting held the following day. That supplemental information was discussed between the USAF and NMFS, and the NMFS recommended the USAF update the content of its supplemental information to clarify recent changes to its approach for EFH consultation completion.
- On 18 March 2016, NMFS emailed a list of comments and questions on the USAF's supplemental information, and guidance on steps to complete EFH consultation. Those comments included a statement that NMFS acknowledges that the supplemental information provided on 14 March would serve as the EFH Assessment and provided sufficient analysis for USAF to satisfy its EFH consultation requirements. Responses to the NMFS questions are included with the USAF letter requesting EFH consultation that accompanies this EFH Assessment.

This page intentionally left blank.

2. Project Description and Action Area

The USAF has coordinated with NMFS since 2012 on the Divert project and the potential alternatives, which included actions on Saipan, Tinian, or both islands. In February 2016, the USAF announced that the preferred alternative for the Divert project is the “Tinian only” alternative. Therefore, the project description in this document addresses the project on Tinian.

The USAF is proposing to improve the Tinian International Airport and the Tinian seaport in support of expanding mission requirements and to achieve divert capabilities in the western Pacific. Under this action, the USAF would construct facilities and infrastructure on Tinian for operation of USAF aircraft for divert landings, periodic exercises, and humanitarian assistance and disaster relief. The purpose of the Divert project is to establish additional divert capabilities to support and conduct current, emerging, and future training activities, while ensuring the capability to meet mission requirements in the event that access to Andersen Air Force Base or other western Pacific locations is limited or denied. The project is needed because there is not an existing divert or contingency airfield on U.S. territory in the western Pacific that is designed and designated to provide strategic operational and exercise capabilities for U.S. forces when needed and humanitarian assistance and disaster relief in times of natural or man-made disasters.

To support divert activities and exercises on Tinian, the USAF would construct facilities at the Tinian International Airport and Tinian seaport to accommodate joint military cargo, tanker, and similar aircraft and associated support personnel. The USAF plans to construct infrastructure and use facilities on either the north side or the south side of the Tinian International Airport. The required infrastructure includes a parking apron; cargo pad; taxiway; maintenance facility; access road; jet fuel receiving, storage, and distribution infrastructure; fire suppression system; and associated fencing and utilities. If the USAF constructed facilities on the north side of the airport, a taxiway and reroute of a small portion of an existing road would also be required. Those facilities would be used on an as-needed basis when exercising divert activities and humanitarian assistance staging, and for unplanned divert landings and humanitarian assistance and disaster relief as needed. The facilities would not be used as a permanent full-time beddown or installation location.

The USAF has not selected whether the north or south option will be implemented; however, the specific location of facilities does not influence the analysis of effects to EFH because:

- no in-water work will be conducted for either option;
- stormwater management facilities, spill control techniques, and other infrastructure necessary can be designed, installed, and effectively operated to meet USAF, CNMI, and Federal requirements to control stormwater runoff and the potential for spills and maintain water quality; and
- for either option, long-term monitoring and adaptive management will be used to ensure that standards are met and that infrastructure installed to manage stormwater and control spills continues to function as designed and to meet applicable requirements.

Unless otherwise stated, the size of facilities described below is the largest that would be required and is based on the north option (see **Figure 2-1**). For additional details about the project, see the *Revised Draft Environmental Impact Statement for Divert Activities and Exercises, Commonwealth of the Northern Mariana Islands*, released in October 2015 (USAF 2015).

2.1 Planning and Construction Phase

The total amount of land that would be required to construct and implement the Project on Tinian is 165 acres. This area includes the construction footprint (i.e., impervious surface) of all proposed infrastructure, approximately 98 acres, as well as an additional buffer area around the proposed infrastructure. The majority of ground disturbance and vegetation clearance, if needed, would occur within the construction footprints. However, some vegetation maintenance could occur within the buffer area to ensure security of and access to the proposed infrastructure.

All infrastructure would be designed to accommodate 12 KC-135 or similar aircraft. The KC-135 aircraft is indicative of tanker or cargo aircraft used by the USAF in the western Pacific. In addition, joint U.S. and foreign military cargo, tanker, and other multi-engine aircraft could use the improved facilities and infrastructure. Examples of these could include, but would not be limited to, the KC-46 Pegasus (KC-46), the C-17 Globemaster (C-17), the C-130 Hercules (C-130), military chartered cargo planes, and military variations of civilian aircraft such as maritime patrol aircraft including the P-3 Orion (P-3) and P-8 Poseidon (P-8).

Roughly based on construction costs, a peak of up to 150 construction workers would support construction of the north option. The number of construction workers during the 3-year construction period would fluctuate and the majority of construction would be carried out by crews made up of fewer than 150 workers. The construction phase would also include the transport of materials between a concrete supply company, the Tinian seaport, and the Tinian International Airport.

The facilities to be developed on Tinian are described individually below. These facilities would be constructed according to all applicable Department of Defense (DOD), USAF, and Federal Aviation Administration (FAA) criteria, including FAA Advisory Circular 150/5300-13A.

2.1.1 Parking Apron

The parking apron would be used to hold USAF and other military aircraft that are being used for exercises, have been diverted to the airport, or are preparing to deliver humanitarian assistance. The new parking apron could accommodate up to 12 KC-135s and would be approximately 1,729,805 square feet (ft²) (39.7 acres). The design strength for the parking apron would require a 12-inch base with 14 inches of concrete. The parking apron would be located adjacent to the proposed fuel tanks at the airport.

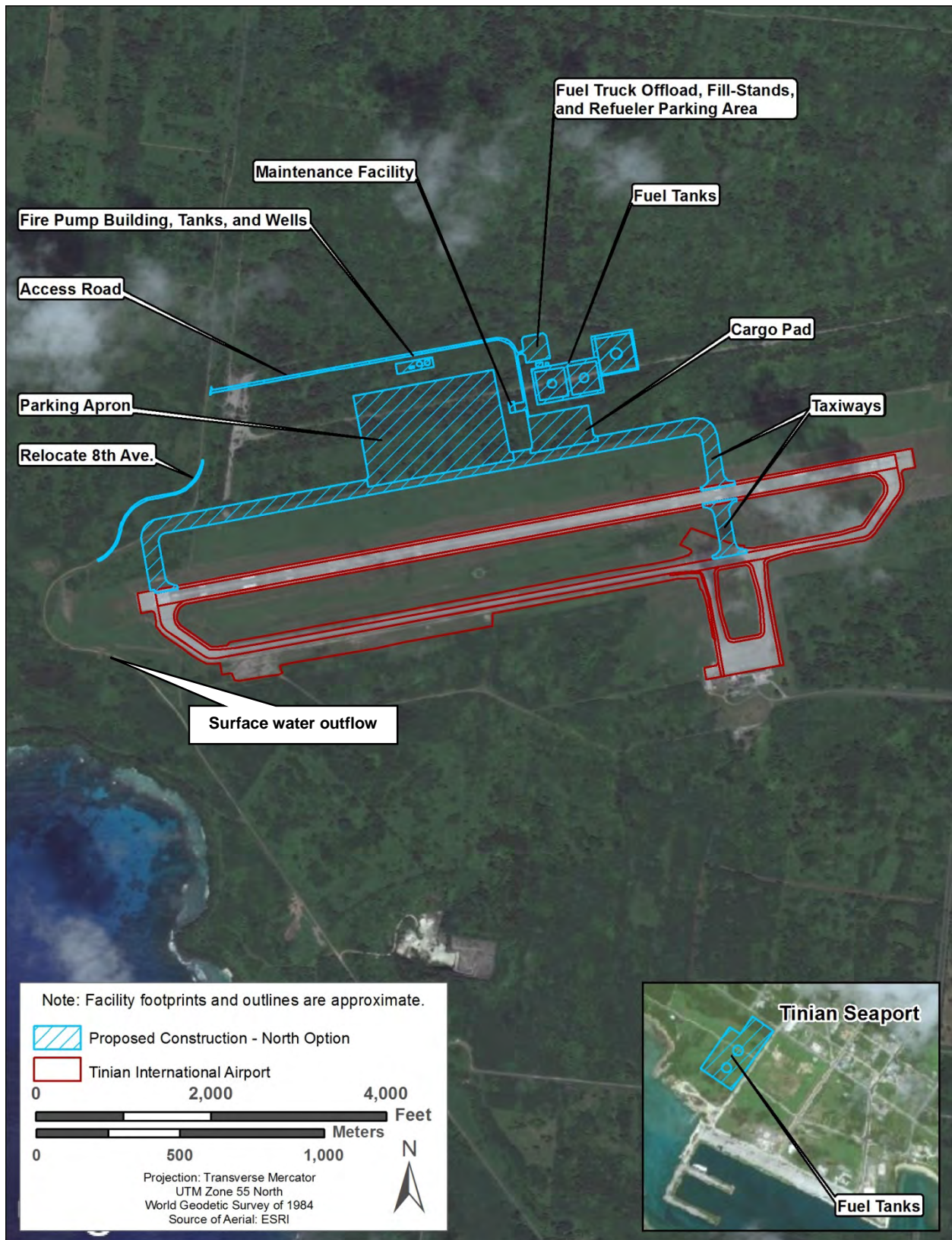


Figure 2-1. Proposed Construction on Tinian

2.1.2 Cargo Pad

A cargo aircraft parking spot (cargo pad) would be constructed to load and offload cargo from aircraft being used for exercises, that have been diverted to the airport, or are preparing to deliver humanitarian assistance. When the cargo pad is not functioning as a cargo loading area, it could be used as an additional parking apron. The cargo pad would be built adjacent to the proposed parking apron. It would be approximately 299,754 ft² (6.88 acres) and would tie into the proposed taxiway. The design strength would require a 12-inch base with 14 inches of concrete.

2.1.3 Taxiway

The Tinian International Airport does not have an existing taxiway on the north side of the airport. The USAF would build a taxiway north of the existing runway to provide access to the parking apron and cargo pad. The taxiway would be approximately 1,385,300 ft² (31.8 acres).

2.1.4 Maintenance Facility

An approximate 7,570-ft² (0.2-acres) maintenance facility would be constructed at the airport or airports selected for improvements. The maintenance facility would be used to store equipment, tools, and spare parts needed to perform aircraft maintenance and repair. The facility would be built adjacent to the proposed fuel tanks.

2.1.5 Access Road and 8th Avenue Reroute

An access road would be constructed to provide an entrance to the proposed infrastructure and specifically the fuel tanks, parking apron, and cargo pad. The access road would be approximately 128,924 ft² (3.0 acres). An existing portion of 8th Avenue west of the airport would be rerouted to accommodate the proposed taxiway construction. The reroute would result in the disturbance of approximately 40,585 ft² (0.9 acres) for the new road.

2.1.6 Jet Fuel Receiving, Storage, and Distribution

An adequate on-island supply of jet fuel would be required in support of aircraft operations discussed under the Project's Implementation Phase. The USAF proposes to maintain a supply of jet fuel at the Tinian International Airport and the Port of Tinian. The fuel storage system at the airport would store approximately 220,000 barrels (bbls) of fuels (6.9 million gallons), configured using two 60,000-bbl tanks and one 100,000 bbl tank. The fuels would be located adjacent to the parking apron and would be approximately 527,437 ft². The fuel storage system would include fuel pumps, valves, filtration systems, an emergency generator, and concrete work. The fuel pump tanks and wells would be approximately 83,705 ft² (1.9 acres).

Jet aircraft refueling capability would be provided at the airport by installing a Hydrant Refueling System as a part of the proposed fuel tanks. The hydrant system would circulate fuel to and from the proposed fuel tanks and parking apron and would be constructed within the proposed disturbance area and concrete footprints.

At the seaport, approximately 100,000 bbls of fuel storage would be built, configured using two 50,000-bbl tanks (**Figure 2-1**). The fuel tanks and associated piping would be approximately

230,587 ft² (5.3 acres). All fuels infrastructure would be constructed according to the most stringent applicable Federal and CNMI requirements. The exact size, configuration, and type of fuel tanks would be dictated by mission requirements and allocated funding. The Divert project would not require modification of in-water facilities at the Tinian harbor.

2.1.7 Fire Suppression System

A fire suppression system would be built consisting of fire water pumps, tanks, and a well contained within one facility. The fire suppression system would contain only water and would provide water in the event of a fire emergency. The water line would be constructed within the disturbance footprint proposed at the airport. The USAF would conduct an analysis of the groundwater flow and the proposed well withdraw rate prior to construction. The fire suppression facility would be approximately 49,527 ft² (1.1 acres).

2.1.8 Fencing and Utilities

The USAF would install fencing around the proposed infrastructure, as needed. Fencing would be installed within the proposed footprint for the infrastructure. The USAF would also install utilities, including electricity, communication lines, water lines, and sewer lines, to assist in the operation of the proposed infrastructure. Utilities would be installed either aboveground or within the disturbance footprint proposed for the airport or airports.

2.1.9 Stormwater Management Controls

The USAF would install stormwater management controls at the Tinian International Airport, almost entirely within the proposed infrastructure footprint. Temporary and permanent stormwater controls would be developed to control stormwater both during construction and once construction is complete and the proposed infrastructure is operational. The USAF would monitor the efficacy of stormwater controls. For additional information on stormwater management and a proposed site design, see **Sections 3.1** and **3.2**.

2.2 Implementation Phase

Tinian International Airport would be used for joint military exercises, military divert operations, humanitarian assistance staging, and other aircraft support activities. The operations proposed during the Implementation Phase would be the same regardless of whether the proposed construction occurred on either the north or south side of Tinian International Airport

A mix of joint military cargo, tanker, and similar aircraft, not to exceed the design capabilities of the airport, could be exercised from the Tinian International Airport simultaneously. The USAF would schedule exercises (take-offs and landings) around existing commercial schedules. Additionally, the USAF would notify the local government and public in advance of the exercises per existing protocols. The Joint Region Marianas Regional Engineer staff would use existing processes to review proposed exercises during the planning phase to ensure the proposed use would remain within the scope of activities analyzed in the EIS.

2.2.1 Divert Landings Operations

Tinian International Airport would be used for divert operations to operate aircraft when other locations in the western Pacific are temporarily unavailable. Training to divert capabilities at Tinian International Airport is discussed in **Section 2.2.3**.

2.2.2 Humanitarian Assistance Staging

In the event of an emergency or disaster, humanitarian assistance staging, including noncombatant evacuation operations, would occur at the Tinian International Airport. Humanitarian assistance would occur within the Mariana Islands and would also allow the USAF to transit support assets from the mainland to other locations requiring assistance within the Asia-Pacific region. The exercises and the training required to execute humanitarian assistance and disaster relief missions would occur at Tinian International Airport as described in **Section 2.2.3**.

2.2.3 Military Exercises

Under the Project, cargo, tanker, and similar type aircraft such as the KC-135 would participate in military exercises. Specific types of aircraft that could be flown to and from Tinian International Airport during exercises would include, but not be limited to, the KC-135 used for aircraft refueling and airlift, the KC-46 Pegasus used for aircraft refueling, the C-130 Hercules used for airlift, the C-17 Globemaster used for airlift; and the C-5 Galaxy used for airlift. The USAF anticipates that two to four KC-135 or similar aircraft would operate up to 8 weeks annually, but typically not on weekends. The USAF estimates that approximately 720 operations (i.e. 360 take-offs and 360 landings) would be completed annually. The Project only includes the ground movements and immediate approaches and departures at Tinian International Airport during unit-level training and joint military exercises. All flight activity after take-off (i.e., above 10,000 feet) would occur within the Mariana Islands Range Complex (MIRC) and is authorized in the MIRC and Mariana Islands Training and Testing (MITT) Records of Decision (RODs).

A mobile air traffic control tower (ATCT) could be deployed during planned military exercises and can be quickly removed at the conclusion of any military exercises. The ATCT would consist of a mobile unit mounted on a vehicle. The mobile ATCT would be located on an existing cleared surface and the location would be coordinated with the FAA and Commonwealth Ports Authority.

2.2.4 Jet Fuel Receiving, Storage, and Distribution

Jet fuel for aircraft operations would be offloaded at the existing fuel offloading facility at the Tinian seaport from vessels capable of navigating the harbor. Fuel would be offloaded into the 100,000-bbl capacity fuel tanks adjacent to the seaport. Standard fuel transfer tank trucks would be used to transfer fuel to the storage tanks at the airport. Fuel transfer activity could last approximately 8 weeks per year to support 8 weeks per year of aircraft operations. There would be no net increase in use of the Tinian harbor.

Jet aircraft refueling capability at the Tinian International Airport would be provided by installing a Hydrant Refueling System as a part of fuel tanks and parking apron. The hydrant system would provide the capability to simultaneously refuel aircraft. Fuel from the fuel tanks at the

airport would be cycled through the hydrant system to the parking apron. Associated valves, piping, and infrastructure at the parking apron would provide refueling capability to the aircraft.

2.2.5 Lodging

Temporary lodging and related personnel support, including medical, transportation, and dining services, would be required for up to 265 personnel during a divert operation, humanitarian assistance and disaster relief, or military exercise events. The USAF would procure lodging, transportation, and dining services from the local economy. Medical services would be provided by military personnel. In an emergency, medical care would be provided by military personnel and would occur at Saipan Hospital under an agreement with the hospital. Medical care would be provided by military personnel on Tinian in non life-threatening situations.

2.3 Action Area

The action area for this project includes all areas proposed for construction as shown in **Figure 2-1**, the watersheds that the proposed construction would occur in, and the nearshore marine environment of Tinian that these watersheds drain into. EFH does not occur in the construction footprint, as the proposed project is on land. However, EFH occurs within the action area offshore of the construction footprint, as described in **Section 4**.

Tinian International Airport spans across two watersheds. The western portion of Tinian International Airport occurs in the Puntan Daiplolamanibot Watershed, which drains west into the Philippine Sea. The eastern portion of Tinian International Airport occurs within the Masalok Watershed, which drains northeast into the Pacific Ocean (CNMI BECQ 2010). The proposed Port of Tinian fuel site occurs within the Makpo Watershed, which drains west-southwest into the Philippine Sea (CNMI BECQ 2010).

Perennial or intermittent streams are not included within the action area because they do not occur on Tinian. The limestone plateaus of Tinian are generally far too porous to support stream or wetland development and most precipitation either evaporates or percolates into the highly permeable limestone substrata; however amounts of runoff have not been previously studied or quantified. Rough estimates of runoff from similar limestone areas of Saipan range from 6 to 12 percent of rainfall (Gingerich 2002). Estimates of hydraulic conductivity from 17 aquifer tests in limestone on Tinian range from 21 to 23,000 feet per day (Gingerich 2002).

Stormwater runoff at the Tinian Airport generally flows into the area between the taxiway and runway and to areas surrounding those impervious surfaces. Most runoff that does not infiltrate flows to the west toward a surface water exit point under Fifth Avenue (**Figure 2-1**). There is a culvert at that location that has a vegetated outflow (**Figure 2-2**) and little or no downstream drainage channel.



Figure 2-2. Surface Water Outflow to the West of the Tinian International Airport.

3. Minimization of Impacts to Water Quality

3.1 Stormwater Management

Sections 3.1.1. and **3.1.2** provide stormwater controls that the USAF would implement prior to or during construction. These controls would ensure proper management of stormwater runoff during both the construction and implementation phases of the project.

3.1.1 Facility Planning and Construction

During construction the USAF would be committed to managing stormwater runoff in accordance with a U.S. Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES) Construction General Permit and would:

- implement erosion and sediment controls;
- stabilize soils;
- implement pollution prevention measures;
- provide and maintain buffers around surface waters;
- prohibit certain discharges; and
- utilize surface outlets for discharges from basins and impoundments.

Prior to the start of construction, and as part of the planning and NPDES permitting process, baseline percolation rates and other parameters necessary to properly design and permit the stormwater management system will be measured at the Tinian Airport and seaport. Preconstruction water quality also will be measured on the site and at the outflow of the existing airport drainage system to establish a baseline for stormwater quality. Should the assessment of effects provided in **Section 6** of this document change based on additional site specific data developed during this permitting process, the USAF would work closely with NMFS, as the Natural Resources Trustee, and USEPA Region 9, the permitting authority, to ensure resources are appropriately protected.

Specific techniques and best management practices to meet these commitments are provided in **Sections 3.1.1.1 through 3.1.1.4.**

3.1.1.1 Erosion and Sediment Control Standards

The USAF would follow standards for erosion and sediment control recommended by the *2006 CNMI and Guam Stormwater Management Manual* (CNMI BECQ and GEPA 2006), including:

- **Standard 1:** Minimize unnecessary clearing and grading from all construction sites. Clearing and grading shall only be performed within areas needed to build the project, including structures, utilities, roads, recreational amenities, post-construction stormwater management facilities, and related infrastructure. Clearing should only be scheduled

during the dry season if possible. Mass clearing during the wet season should be avoided.

- **Standard 2:** Whenever practicable and feasible, construction shall be phased to limit disturbance to only one area of active construction at a time. Future phases shall not be disturbed until construction of prior phases is complete and the land area is stabilized.
- **Standard 3:** Disturbed areas shall be stabilized as soon as feasibly possible after construction is completed within a designated construction area, and in no case longer than 14 days after completion of active construction.
- **Standard 4:** Steep slopes shall be protected from erosion by limiting clearing of these areas in the first place or, where grading is unavoidable, by providing special techniques to prevent upland runoff from flowing down a steep slope and through immediate stabilization to prevent gullyng. A steep slope is defined as any slope over 20 percent (5:1) in grade over a length of 50 feet.
- **Standard 5:** Perimeter sediment controls shall be applied to retain or filter concentrated runoff from disturbed areas to trap or retain sediment before it leaves a construction site. Upland runoff should be diverted around excavations where possible.
- **Standard 6:** Sediment trapping and settling devices shall be employed to trap and/or retain suspended sediments and allow time for them to settle out in cases where perimeter sediment controls (e.g., silt fence) are deemed to be ineffective in trapping suspended sediments on-site.
- **Standard 7:** All construction site managers (or superintendents) shall provide documentation that they have received adequate training in the application and maintenance of erosion and sediment control practices.
- **Standard 8:** All construction site managers must participate in a pre-construction meeting with the applicable authority to review the provisions of the erosion and sediment control plan and make any field adjustment necessary to implement the intent of the plan to minimize erosion and maximize sediment retention on-site throughout the construction process.
- **Standard 9:** Construction should be scheduled to minimize soil exposure in the rainy season (July 1st–Nov. 30th) and during periods of coral spawning. The 2014 CNMI Water Quality Standards note that to avoid coral spawning, a stoppage period starting around the June or July full moon (to be determined by BECQ), is required. The stoppage period, if determined to be applicable, shall be no less than twenty one calendar days (CNMI BECQ 2014a). USAF will also contact CNMI BECQ to determine when soil exposing work should be halted during spring rainfall events to avoid adversely affecting soft corals that are spawning.
- **Standard 10:** Erosion and sediment control practices shall be aggressively maintained throughout all phases of construction. All erosion and sediment control plans shall have an enforceable operation and maintenance agreement.

The USAF would keep waste materials, stockpiles, and building supplies tied down or covered to protect from wind or stormwater. Additionally, in accordance with CNMI Chapter 65-30 *Earthmoving and Erosion Control Regulations* the USAF would minimize grading, filling, clearing of vegetation or other disturbance of the soil during inclement weather and for the resulting period of time when the site is in a saturated, muddy or unstable condition.

3.1.1.2 Erosion and Sediment Control Plan

In compliance with CNMI Chapter 65-30 *Earthmoving and Erosion Control Regulations*, the USAF would develop an ESCP that would be implemented during construction. The plan would include, at a minimum:

- Elevations and dimensions including quantity, and extent of proposed grading;
- Existing tree locations, size, species, and the proposed extent and manner of tree cutting and vegetation clearing;
- A description of equipment and methods to be employed.

3.1.1.3 Stormwater Pollution Prevention Plan

The USAF would also develop a SWPPP that would adhere to USEPA Guidelines. The SWPPP will be completed prior to submitting the Notice of Intent for permit coverage. The SWPPP will describe:

- Responsible parties
- Site evaluation, assessment, and planning
- Documentation of compliance with other federal requirements
- Erosion and sediment controls
- Permanent construction BMPs
- Pollution prevention standards
- Inspection and corrective actions
- Training requirements
- Certification and notification requirements
- Operation and maintenance of permanent stormwater controls

3.1.1.4 Stormwater Management Site-Specific Measures

The USAF would design all construction site stormwater management measures to accommodate (safely convey without creating erosive conditions) the 10-year frequency storm. The 10-year frequency storm represents a large event that will generally produce significant runoff and yet has a relatively high chance of occurring in any given year (i.e., 10 percent) (CNMI BECQ and GEPA 2006).

The USAF would design all temporary sediment trapping devices to retain runoff from a minimum of the 1.5-inch precipitation event. The 1.5-inch storm represents a frequent event that generates runoff and potential sediment load. In CNMI and Guam, the 1.5-inch event is equal to or greater than approximately 90 percent of precipitation events and, therefore, a design criterion that requires the capture of this event will capture approximately 90 percent of the annual sediment load from construction sites (CNMI BECQ and GEPA 2006).

For maximum efficacy, the USAF site-specific stormwater management measures would include some, or all, of the following to manage stormwater runoff from the 10-year frequency storm:

- **Stabilized construction entrances.** Stabilized construction entrances are temporary crushed rock/coral pads located at all points where vehicles enter or leave a construction site. The purpose of a stabilized entrance is to reduce the tracking of sediment/mud from the site onto paved roads and parking lots.
- **Silt fencing.** A temporary barrier of geotextile fabric, silt fencing is installed across a slope, around stockpiles, or along a perimeter. The purpose of a silt fence is to intercept sediment-laden runoff from small drainage areas of disturbed soil, slow runoff velocity, and allow sediment to settle out. Alternatives to silt fencing could include:
 - o Earth berms: Linear barrier of compacted soil used to block or divert runoff.
 - o Compost socks: Mesh tubes (also called filter socks or tubes) filled by blower with organic or wood mulch. They can be used around site perimeters, as conveyance checks, and as inlet protection.
 - o Silt dikes: Reusable, triangular, foam product covered in geotextile used along perimeters, curbs, and as check dams.
- **Berms and swales.** Berms and swales, depending on their location, can be used to divert “clean” runoff around disturbed areas, or to move “dirty” runoff to sediment traps. Berms (also called earth berms or diversion dikes) are mounds of compacted soil placed at the top or base of slopes, along the site perimeter, or across exposed areas. Swales are temporary channels used to convey runoff to a sediment trapping device.
- **Check dams.** Small check dams constructed of rock/coral, bagged sand, compost tubes, or other durable materials are placed across an open drainage channel to reduce erosive runoff flows and allow sediment to settle out.
- **Channels.** Vegetated or lined channels are used to safely convey flows from stabilized areas or outlets without damage from erosion. Waterways are typically stabilized with grass, erosion control matting, rock rip rap, gabions, or concrete depending on slope, soil, and runoff velocity.
- **Basins and traps.** Large basins and small traps are temporary ponding structures used to collect runoff and allow sediment to settle out before runoff leaves site. Basins and traps are formed by an embankment and/or excavation.

- **Stabilization.** Covering an area of bare ground with vegetation, topsoil, mulch, or erosion control blankets for temporary or permanent erosion prevention is critical. Temporary stabilization is often needed because grading operations can last several months and extend into or through the rainy season. Final stabilization will be required for project close out. Vegetative cover can be established through a combination of seeding techniques, topsoil amendments, and mulching to conserve moisture and control weeds.
- **Erosion control blankets.** Temporary erosion control blankets (also called matting) are used to hold seed and soil in place, particularly on steep slopes. There are many types of products available made of biodegradable or synthetic materials.
- **Inlet protection.** Various inlet protection devices can be used as temporary structures to keep silt, sediment, and construction debris from entering storm drains through open inlets. Practices should trap sediment while allowing water to slowly flow over or through materials.
- **Outlet protection.** Rock should be placed around and below an outlet to stabilize the outlet, reduce the depth and velocity of discharge waters, and prevent downstream erosion. Outlet protection applies to culverts, outfalls from basins, and other conduits.
- **Level spreaders.** Level spreaders are temporary (or permanent) devices that take concentrated flow from a pipe, berm, or swale and release it evenly over a wider area to prevent erosion and promote infiltration. This is particularly useful where sheet flow discharges through vegetated buffers are possible.

3.1.1.5 Stormwater Monitoring During Construction

Before construction, the USAF will establish a baseline for stormwater quality by sampling at the existing stormwater outlets. This data will be used to assist with the development of the stormwater monitoring plan and permit. All stormwater management structures and practices would be inspected and maintained during all stages of the construction process in accordance with the SWPPP and CNMI regulations to ensure proper function. Inspections would be conducted by on-site USAF or contractor personnel. At a minimum, those inspections would occur following major rainfall events to ensure that stormwater control structures are functioning as designed and remain effective. During events that cause sufficient surface flows, water quality would be sampled at the outfall of the airport stormwater drainage system.

The USAF would implement an adaptive management approach that would be based on information obtained during regular monitoring and inspection of construction stormwater management controls. The USAF would identify any structures that are damaged or are not functioning in accordance with applicable standards and repair them. In addition, the planned objectives and required standards described above would serve as thresholds for determining whether the construction stormwater management system would need to be improved to avoid affecting the nearshore marine environment. The USAF has programmed for costs associated with stormwater monitoring and repair, if needed, to ensure timely completion of these inspections and repairs as a part of an adaptive management process. The USAF Engineering Technical Letter (ETL) 14-1 *Construction and Operation and Maintenance Guidance for Storm*

Water Systems provides inspection checklists and schedules for each type of stormwater management control that would be followed for inspections and maintenance.

3.1.2 After Construction

This section addresses controls, and the approach to developing the controls that will be included in the project design to ensure effective stormwater management once the project is constructed and in use. As described in **Section 3.1.1. and 3.1.1.3**, the USAF would also obtain a NPDES permit for operation of the proposed facilities, after construction is complete, and a SWPPP would be developed to support this permit. During the NPDES permitting process for facility operation, the USAF will develop additional data to support site specific designs of stormwater controls, in compliance with the permit requirements. Should the assessment of effects provided in **Section 6** of this document change based on additional site specific data developed during this permitting process, the USAF would work closely with NMFS, as the Natural Resources Trustee, and USEPA Region 9, the permitting authority, to ensure resources are appropriately protected.

Sections 3.1.2.1 through 3.1.2.5 also addresses stormwater controls that will be put into place during the implementation phase of the project, described in **Section 2.2**.

3.1.2.1 Approach to Stormwater Infrastructure Design

The overall design objective for the USAF project is to maintain predevelopment hydrology and prevent any net increase in stormwater runoff once the site is constructed. “Predevelopment hydrology” is defined as the pre-project hydrologic conditions of temperature, rate, volume, and duration of stormwater flow from the project site.

The USAF would implement methods for determining potential stormwater runoff based on a “design storm.” The design storm is a designation that defines a unit depth of rainfall in order to quantify the volume of rainfall generated for a given site. The DOD and USAF have chosen to adopt the USEPA’s 95th percentile methodology to determine the design storm. The design storm event is the 95th percentile rainfall depth and is based on the 24-hour (daily) rainfall depth averaged over a minimum of 10 years. By averaging the rain from all storm events that falls within 24 hours for several years, the USAF can statistically predict the intensity of a storm that is equal to or less than 95 percent of all storms (DOD 2015). This will result in a practical and reasonable approach, as suggested by the EPA, in determining water volumes. The ‘design storm’ will be used to calculate pre- and post-development stormwater volumes (DOD 2015).

The USAF would then identify the pre-development condition of the site and quantify the post-development runoff volume and peak flow discharges that are equivalent to pre-development conditions. The post-construction rate, volume, duration, and temperature of runoff would not exceed the pre-development rates (DOD 2015). As described in **Section 3.4**, the USAF would also develop and implement plans, and conduct monitoring, to ensure that water flowing from Divert project sites meet CNMI water quality standards.

3.1.2.2 Low Impact Development: Stormwater Infrastructure Design

The USAF would implement Low Impact Development (LID) strategies for stormwater management. The process flow for considering and identifying these strategies is described below:

1. Site utilization: The USAF will reduce the impervious footprint in the project design to the extent possible. Examples include removal of curbs, gutters, and paved swales. The USAF will retain as much of the natural tree cover as practical. Due to concerns over strength, durability, and risk of infiltration of fuel spills, the USAF is not planning to use permeable runway or parking apron surfaces.
2. Filtration: The USAF will seek to include filtration practices in the site design. Examples of filtration include: vegetative buffers, filter strips, vegetative swales, check dams, sediment traps, and overland flow, providing natural water quality treatment. Native vegetation will be used where feasible
3. Interception and Infiltration: The infiltration techniques of LID are the backbone of the runoff volume reduction. Depression storage, bio-infiltration, pervious pavements, open pavers, rain gardens, infiltration trenches, and tree boxes are examples of infiltration techniques. Interception can also play a major role in reducing runoff volumes. Interception techniques include deep mulch beds, tree cover, and soil amendments.
4. Retention of Stormwater Volumes: If necessary, retention will also be considered to meet the design standards and successful LID implementation. Retention seeks to hold runoff from localized impervious surfaces for subsequent treatment after the rainfall event. Rain barrels, cisterns, and parking lot storage that slowly infiltrates into the ground are examples of retention techniques.
5. Structural Solutions: Structural solutions represent the last line of defense in LID features. These techniques are engineered solutions for the particular facility and can include green roofs, rainwater reuse systems, parking structures, and irrigation storage systems.

3.1.2.3 Performance Standards for Site Development

To prevent adverse impacts of stormwater runoff, the USAF will seek to include the following performance standards, as recommended by the 2006 CNMI and Guam Stormwater Management Manual (CNMI BECQ and GEPA 2006), to the maximum extent technically feasible, in the design of the project. Note that some standards, such as on-site treatment of water, might not fully apply to the site specific conditions and stormwater management approach developed for the Divert project. **Section 3.2** describes the current stormwater management conceptual design that incorporates these standards. The approach described in that section relies on the use of strategically placed berms to intercept surface water flows from impervious surfaces and promote rapid infiltration to maintain pre-development hydrological conditions and avoid an increase in the runoff of sediment and fresh water into the marine environment.

- **Standard 1:** The USAF will strive to reduce the generation of stormwater runoff and utilize pervious areas for stormwater treatment. For development sites over 1 acre, such as this project, impervious cover shall and will not exceed 70 percent of the total site area.
- **Standard 2:** Stormwater management will be provided through a combination of the use of structural and non-structural practices.
- **Standard 3:** All stormwater runoff generated from the project will be adequately treated to the maximum extent technically feasible if it would result in discharge into jurisdictional wetlands or inland and coastal waters of CNMI.
- **Standard 4:** Pre-development annual groundwater recharge rates and runoff rates to coastal waters will be maintained by promoting infiltration through the use of structural and non-structural methods.
- **Standard 5:** Structural stormwater BMPs will be designed to remove 80 percent of the average annual post development total suspended solids (TSS) load and match or exceed predevelopment infiltration rates, as possible. It is presumed that a BMP complies with this performance standard if it is:
 - o sized to capture the prescribed water quality volume (WQ_v),
 - o designed to match or exceed pre-development infiltration rates,
 - o designed according to the specific performance criteria prescribed by the CNMI and Guam Stormwater Management Manual (CNMI BECQ and GEPA 2006)
 - o constructed properly, and
 - o maintained regularly.
- **Standard 6:** The post-development peak discharge rate frequency will not exceed the pre-development peak discharge rate for the 25-year frequency storm event.
- **Standard 7:** To protect stream channels from degradation, a channel protection volume will be provided by means of 24 hours of extended detention storage for the one-year frequency storm event.

3.1.2.4 Stormwater Management Site-specific measures

As described in **Section 3.1.2.2**, the USAF would implement LID technologies for stormwater management. This section outlines examples of BMPs that the USAF will employ as applicable to capture stormwater runoff and meet water quality treatment goals. These BMPs are provided in **Table 3-1** and would be consistent with LID requirements of United Facilities Criteria (UFC) 3-210-01 *Low Impact Development* (DOD 2015) and were selected based on the following criteria:

1. can capture and treat the full WQ_v,
2. are capable of approximately 80 percent TSS removal,

Table 3-1. Structural Stormwater Management BMPs

Group	Practice	Description
Infiltration	Infiltration Trenches/Chambers	An infiltration practice that stores the water quality volume in the void spaces of a limestone aggregate trench or within an open chamber before it is infiltrated into underlying soils within the B or C soil horizons.
	Infiltration Basin	An infiltration practice that stores the water quality volume in a shallow surface depression before it is infiltrated into the underlying soils within the B or C soil horizons.
Filtering Practices	Bioretention	A shallow depression that treats stormwater as it flows through a soil matrix, and is returned to the storm drain system, or infiltrated into underlying soils or substratum.
Open Channels	Dry Swale	An open vegetated channel or depression explicitly designed to detain and promote filtration of stormwater runoff into an underlying fabricated soil matrix.

Source: CNMI BECQ and GEPA 2006.

3. are capable of meeting management objectives for specific resource protection areas through elevated total phosphorus, total nitrogen and/or fecal coliform bacteria removal and,
4. have acceptable longevity in the field.

As stated in **Section 3.1.2.1**, the stormwater management system and associated BMPs would be designed to capture, at a minimum, the 95th percentile rainfall event. The BMPs would also be designed to meet water quality criteria, overland erosion and channel protection criteria, overbank flood control/receiving stream criteria, and recharge criteria. A downstream analysis would also be conducted.

- **Water quality:** Improved pollutant loading reductions, full volume control for the 95 percentile storm event (DOD 2015). The WQv is intended to improve water quality by capturing and treating the 95 percentile storm event.
- **Overland Erosion and Channel Protection:** The runoff volume generated by the one-year, 24-hour rainfall would be gradually released over a 24-hour period to minimize overland erosion and downstream channel expansion. The premise of this criterion is that runoff would be stored and released in such a gradual manner that critical erosive velocities would not be reached (CNMI BECQ and GEPA 2006).
- **Recharge criteria:** Tinian is limestone-dominated and requires infiltration of 1.5 inches of precipitation from all impervious surfaces (CNMI BECQ and GEPA 2006).

- **Downstream flooding:** Controlled to pre-development conditions for the 95th percentile storm event (DOD 2015).

Additional LID site features that the USAF could deploy include rain gardens, vegetated filter strips, downspout disconnection, reduced impervious area, tree preservation or re-vegetation using native plants, soil amendments.

3.1.2.5 Stormwater Monitoring after Construction

The goal of LID is to retain the same amount of rainfall within the development site as that was retained on the site prior to the project. The USAF would conduct post-construction site visits to inspect the system and assess the as-built LID features and validate if they have been constructed according to plans and specifications.

All stormwater management structures and practices would be inspected and maintained in accordance with the SWPPP and CNMI regulations to ensure proper function. Inspections would be conducted by on-site USAF or contractor personnel. At a minimum, those inspections would occur following major rainfall events to ensure that stormwater control structures are functioning as designed and remain effective. During events that cause sufficient surface flows, water quality would be sampled at the outfall of the airport stormwater drainage system.

The USAF would also implement an adaptive management approach that would be based on information obtained during regular monitoring and inspection of permanent stormwater management controls. The USAF would identify any structures that are damaged or are not functioning in accordance with applicable standards and repair them. The objectives and required standards described above would serve as thresholds for determining whether the construction stormwater management system would need to be improved to avoid affecting the nearshore marine environment. The USAF has programmed for costs associated with stormwater monitoring and repair, if needed, to ensure timely completion of these inspections and repairs as a part of an adaptive management process. USAF ETL 14-1 provides inspection checklists and schedules for each type of stormwater management control that would be followed for inspections and maintenance (USAF 2014).

The USAF would conduct monitoring consistent with requirements established by the CNMI. Specific water quality criteria data are provided in **Section 3.4**. The stormwater management system will be adaptively managed and improved when necessary to ensure that all planned objectives and required standards are being met.

3.2 Summary of Stormwater Management Conceptual Design

The USAF has developed an example conceptual design (see **Figure 3-1**) of the proposed project that includes stormwater management controls. This design is based on several key factors, including existing site conditions and compliance with the impact minimization measures provided in **Section 3.1**. **Table 3-2** provides a summary of the assumptions and conservative estimates that have been included in the conceptual site design. The key factors considered in the site design include:

- **Factor 1:** The proposed project would result in an increase of approximately 98 acres of impermeable surface within the undeveloped area proposed for military lease north of the Tinian International Airport (see **Section 2.1**).
- **Factor 2:** The USAF would retain 100 percent of the stormwater runoff associated with a 95th percentile storm event "to the maximum extent technically feasible" as identified in UFC 3-210-10 and described in **Section 3.1.2.1**. UFC 3-210-10 defines the 95th percentile storm event as 2.2 inches for Guam and the CNMI and Guam Stormwater Management Manual states that Tinian rainfall is 20 percent less than Guam (CNMI BECQ and GEPA 2006). Therefore, design of stormwater controls on Tinian to contain a 2.2 inch 24-hour rainfall event is a conservative approach that would compensate for any increase in storm intensity that might be occurring or might occur in the future due to climate change.
- **Factor 3:** Based on the design storm event, and proposed increase in impervious surfaces for the project, 18 acre-feet of water would be generated.
- **Factor 4:** There are no wetlands or streams within the proposed construction areas (see **Section 5.3**).
- **Factor 5:** General stormwater flow moves from east to west across the action area (see **Section 5.3**).
- **Factor 6:** The Tinian International Airport and Seaport are entirely underlain by Mariana Limestone (a rocky, calcium carbonate substrate with high porosity) (see **Section 5.1**).
- **Factor 7:** The USAF would not implement open water solutions or technologies as they are not LID and would cause a Bird Aircraft Strike Hazard risk at the airport.
- **Factor 8:** The infield between the proposed taxiway, existing runway, and existing taxiway is large enough to serve as a "recharge area" to accommodate the design storm event without stormwater runoff leaving the airfield.
- **Factor 9:** Berms to direct stormwater flow could only have limited relief due to flightline restrictions.
- **Factor 10:** The USAF will implement adaptive management as the project design and implementation continues.
- **Factor 11:** The USAF is required to and will comply with UFC 3-210-01 to implement LID strategies at the site. Specifically, funding is programmed for earthwork to address stormwater runoff.

As shown in **Figure 3-1**, consideration of these 11 factors have led to the development of a conceptual site design that would include, at a minimum, berms and infiltration areas. The in-fields on each side of the runway each provide over 50 acres (500 feet by 5000 feet) that can be used to retain stormwater by constructing a series of small berms at the west end and in intermediate areas of the infield. The 18 acre-feet of water to be retained would be approximately 2 inches deep if spread across this area, and due to the porosity of the substrate,

would be expected to infiltrate to the freshwater lens of the underlying aquifer (**Section 5.3**). For overflow during larger storm events, the USAF would determine, based on an adaptive management approach, whether a large area away from the runway along 8th Avenue and the proposed road reroute should be used to further control runoff. A taller berm in this area could be constructed, allowing a larger volume of water and associated sediment to be intercepted away from the airfield. These features would prevent stormwater produced from a 95 percentile rain event from leaving the site and would direct the water into low lying areas for infiltration. They would also contain much of the sediment and surface water flow from a larger rainfall event.

Table 3-2. Assumptions and Conservative Estimates in the Conceptual Site Design

Assumption	Safety Factors
Tinian North option	Approximately 98 acres of impervious surfaces- 33% larger than Tinian South option (65 acres)
Proposed impervious structures would be place on undeveloped (pervious land)	At least 6% of the infrastructure is proposed to be on existing developed surfaces (that do not have stormwater controls in place)
All proposed infrastructure (98 acres) would be impermeable	Some of the proposed features, e.g., access road, would not be paved surfaces
Guam rainfall event is used to determine 95 th percentile storm event	Tinian receives approximately 20% less rainfall than Guam
The entire action area is underlain by Mariana limestone and no known karst features occur	Sink holes, crevasses or other karstic hydrologic features could occur under the action area and further facilitate stormwater infiltration

As described in **Section 3.1**, the USAF will develop additional data to support more detailed site specific designs, in compliance with the permit requirements. Should the assessment of effects provided in **Section 6** of this document change based on additional site specific data developed during this permitting process, the USAF would work closely with NMFS, as the Natural Resources Trustee, and USEPA Region 9, the permitting authority, to ensure resources are appropriately protected.

3.3 Spill Prevention and Control

Because the project site has frequent rainfall, a high surface infiltration rate, and the potential for a very high rate of conductivity through the subsurface limestone, any spills or releases of hydrocarbons or other hazardous materials would rapidly travel into and through the underground system and eventually be released into the marine environment. Because of these conditions, any spilled fuels or other pollutants would be very difficult to intercept or recover once released from the built environment. For these reasons, the USAF will develop and implement a spill prevention and control system that focuses on preventing spills and, in the unlikely event that a spill would occur, containing hazardous materials and rapidly responding to prevent their release. Implementing a comprehensive spill prevention and control program, and properly maintaining and adaptively managing the associated facilities, will reduce to a very low level the

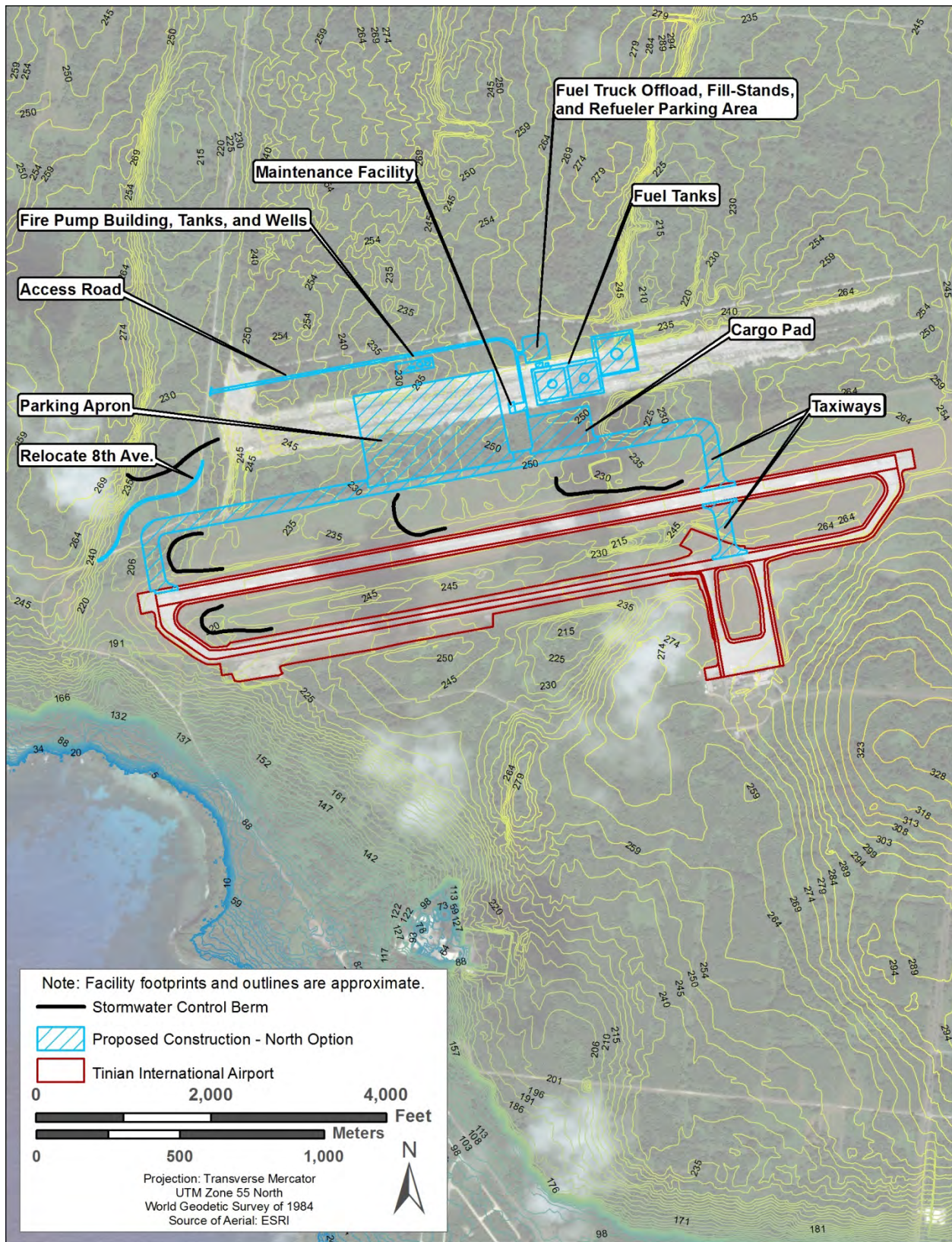


Figure 3-1. Conceptual Site Design for Stormwater Management

probability that a release of hydrocarbons or other hazardous materials would reach the marine environment and adversely affect EFH.

3.3.1.1 Fuel Storage Design and Management Standards

To reduce the likelihood of spills during construction and during military exercises, as well as the impact of spills (e.g., or spill migration to nearshore waters) in the unlikely event that one should occur, all proposed fuels infrastructure on Tinian would be constructed according to the most stringent applicable Federal and CNMI requirements. Specific standards include:

- **Standard 1: Design and Construction.** The USAF would follow the American Petroleum Institute (API) Standard 650 for material, design, fabrication, erection and inspection for petroleum, oil, and lubricants (POL) storage tanks. Construction will follow design calculations that conform to API 650 and would include design calculations for seismic, internal and external pressures, and wind loading.
- **Standard 2: Tank Integrity Testing.** The USAF would conduct periodic integrity testing of all aboveground storage tanks, including visual inspection and where deemed appropriate, another form of nondestructive testing. The frequency and type of inspection and testing will take into account container size and design and industry standards.
- **Standard 3: Secondary Containment.** The USAF will construct POL storage tanks with a secondary means of containment, such as a dike capable of holding the entire contents of the tank, plus an extra 10 percent in capacity, to allow for precipitation and expansion of product. Permeability of containment areas will be a maximum of 10⁻⁷ centimeters per second (cm/sec). (Note that 10⁻⁷ cm/sec is the permeability of compacted clay and a 1-meter layer would not allow liquid to pass through in 200 years). Drainage of stormwater from containment areas will be controlled by a valve that is locked closed when not in active use. Stormwater will be inspected for petroleum sheen before being drained from containment areas. If petroleum sheen is observed it will be collected with sorbent materials prior to drainage.
- **Standard 4: Valves and Piping.** The USAF will periodically inspect all aboveground valves, piping, and appurtenances associated with POL storage tanks in accordance with API 570 which is the recognized industry standards. Buried piping will be tested for integrity and leaks at the time of installation, modification, construction, relocation, or replacement.
- **Standard 5: Loading/Unloading.** The USAF will design loading and unloading racks to handle discharges of at least the maximum capacity of any single compartment of a storage tank truck loaded or unloaded at the racks. The USAF will construct appropriate containment and/or diversionary structures (dikes, berms, culverts, spill diversion ponds, etc.) or use equipment (sorbent materials, weirs, booms, other barriers, etc.) at loading/unloading areas to prevent a discharge of POL.
- **Standard 6: Vehicle Warning Systems.** The USAF will design and construct means to provide an interlocked warning light or physical barrier system, warning signs, wheel

chocks, or vehicle break interlock system at loading/unloading racks to prevent vehicles from departing before complete disconnection of flexible or fixed oil transfer lines.

- **Standard 7: Personnel Training.** The USAF will annually train all personnel handling POL in the operation and maintenance of equipment to prevent discharges; discharge procedure protocols; and general facility operations.
- **Standard 8: Equipment Testing.** The USAF will maintain all petroleum equipment in good functioning order, including regular testing and checking for any failure. This greatly adds to the effectiveness of spill prevention control and countermeasures.
- **Standard 9: On-site Personnel:** The USAF would provide a full-time onsite person or persons to inspect and maintain all POL infrastructures, in accordance with USAF requirements. These personnel would also provide the USAF with spill planning preparedness and response capability thereby potentially upgrading island wide capability for spill response thorough cooperative spill response agreements that could be developed.

3.3.1.2 Spill Prevention Control and Countermeasures Plan

The USAF will develop and implement a SPCC Plan (as required by Section 311(j)(1)(C) of the Clean Water Act as amended by the Oil Pollution Act of 1990) to control the potential for contamination from the unlikely event of a spill. All fuel tanks proposed as a part of the Project would include secondary containment to eliminate the potential for spills that could ultimately find their way into nearshore waters.

The SPCC Plan will be prepared, maintained, and implemented to prevent, control, counteract, and report of all spills. The SPCC Plan will provide measures to prevent, and to the maximum extent practicable, to remove a worst case discharge from the facility. The plan will be certified by an appropriately licensed or certified technical authority ensuring that the plan considers applicable industry standards for spill prevention and environmental protection, and that the plan is prepared in accordance with good engineering practice and is adequate for the facility. Specifically, the SPCC Plan will include:

- **Prevention Section.** The prevention section of the plan will contain information on the facility; charts of drainage patterns; designated water protection areas; maps showing locations of various infrastructure which store, handle, and transfer POL that could produce a spill; critical water resources; land uses; and possible migration pathways. Maps would also be included, as appropriate, to predict direction and rate of flow, as well as the total quantity of substances that might be spilled as a result of a major failure.
- **Arrangements for Emergency Services.** The plan will describe arrangements with local police departments, fire departments, hospitals, contractors, and emergency response teams to coordinate emergency services. The plan will include a list of all emergency equipment, such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment, at each site where this equipment is required; an evacuation plan and a designated meeting place.

- **Spill Control Section.** The control section of the plan will identify resources for cleaning up spills, and directions on how to provide assistance to other agencies when requested. This section of the plan will contain a prioritized list of various critical water and natural resources that will be protected in the event of a spill. The plan will identify other resources addressed in prearranged agreements that are available to cleanup or reclaim a large spill, if such spill exceeds the response capability of the facility.

3.3.1.3 Facility Response Plan

The USAF would also develop an FRP, per the Oil Pollution Act of 1990 which amended the Clean Water Act, which would address an accidental "catastrophic" spill. The FRP would include the resources of all industrial activities (the Tinian International Airport, for example) and the US Coast Guard to direct how to handle an incident of the scale beyond any single individual facility's capability to respond.

3.3.1.4 Operation, Inspection, and Monitoring of Fuel Systems

To ensure proper operation of all fuel infrastructure, the USAF would follow Technical Order 37-1-1, *General Operations and Inspection of Installed Fuel Storage and Dispensing Systems* and UFC 3-460-03, *Operation and Maintenance: Maintenance of Petroleum Facilities*. The safe, efficient, and economical operation of petroleum storage, dispensing systems, and associated infrastructure depends largely on an effective and proactive recurring maintenance program. The USAF would follow UFC 3-460-03, which establishes the required frequency intervals for the recurring maintenance. For example, all above ground storage tanks must be inspected a minimum of once per year.

3.4 Water Quality Criteria

Based on the design, implementation, and management of controls described in **Sections 3.1, 3.2, and 3.3**, the USAF does not anticipate that stormwater runoff or POL would be discharged into the nearshore waters of Tinian during or after construction, or that the Divert project would cause a measureable increase in the volume or discharge rate of fresh water into the marine environment. The USAF would be committed to ensuring that any stormwater runoff or release from the project site is consistent with CNMI Water Quality Standards (CNMI BECQ 2014a).

The following factors are often used to provide a measure of water quality: concentration of dissolved oxygen; levels of fecal coliform bacteria from human and animal wastes; concentrations of plant nutrients nitrogen and phosphorus; amount of particulate matter suspended in the water (turbidity); and amount of salt (salinity). In many bodies of water, the concentration of chlorophyll-a, a green pigment found in microscopic algae, is also filtered from water samples to give a measure of the microalgae living in the water column. Quantities of pesticides, herbicides, heavy metals and other contaminants may also be measured to determine water quality.

Table 3-3 provides the CNMI BECQ-published water quality standards for the waters of CNMI, which are the minimum water quality criteria that the USAF would comply with for discharges into Tinian waters (CNMI BECQ 2014a). The USAF is required to comply with CNMI water quality standards in compliance with a Clean Water Act, Section 401 Certification. Additional

parameters can be added to or deleted from the list based upon knowledge of the onsite operations. For example, if weeds are to be controlled by a particular herbicide, it could be included on the list of parameters.

Table 3-3. 2014 CNMI Water Quality Standards

Criteria	Level¹
Enterococci	Shall not exceed a geometric mean of 35 per 100 mL based on samples taken in any 30 day interval. The Statistical Threshold Value is 130 Enterococci per 100 ml.
E. coli	Shall not exceed a geometric mean of 126 per 100 mL based on samples taken in any 30 day interval. The Statistical Threshold Value is 410 E. coli per 100 ml
pH	Shall not deviate more than 0.5 units from a value of 8.1; no lower than 7.6 or higher than 8.6
Nitrate-Nitrogen	Concentration shall not exceed 0.20 mg/l
Total Nitrogen	Concentration shall not exceed 0.40 mg/l
Orthophosphate	Concentration shall not exceed 0.025 mg/l
Total Phosphorous	Concentration shall not exceed 0.025 mg/l
Ammonia	Concentration shall not exceed 0.02 mg/l
Dissolved oxygen	Concentration all waters shall not be less than 75 percent saturation. Where natural conditions cause lower dissolved oxygen levels, controllable water quality factors shall not cause further reductions.
TSS	Concentrations of suspended matter at any point shall not be increased from ambient conditions at any time, and should not exceed 5 mg/l except when due to natural conditions.
Salinity	No alterations of the marine environment shall occur that would alter the salinity of marine or estuarine waters more than 10 percent from ambient conditions or which would otherwise adversely affect the indigenous biota and sedimentary patterns, except when due to natural causes.
Temperature	Water temperature shall not vary by more than 1.0°C from the ambient conditions.
Turbidity	Turbidity at any point, as measured by nephelometric turbidity units (NTU), shall not exceed 0.5 NTU over ambient conditions.
Oil and Petroleum Products	The concentration of oil or petroleum products in any Commonwealth or State waters shall not: (a) Be detectable as a visible film, sheen, or discoloration of the surface, or cause an objectionable odor. (b) Cause tainting of fish or other aquatic life, be injurious to the indigenous biota, or cause objectionable taste in drinking water. (c) Form an oil deposit on beaches or shoreline, or on the bottom of a body of water.

¹The level given is the most stringent standard for the marine waters of Tinian. Less stringent standards are applicable for some criteria for discharges into the San Jose harbor or fresh waters.

Source: CNMI BECQ 2014a

This page intentionally left blank.

4. EFH in the Action Area

Tinian is located in the Mariana Islands, which are within the jurisdiction of the Western Pacific Region Fishery Management Council (WPRFMC). The WPRFMC has designated the marine waters around the Mariana Archipelago as EFH based on a precautionary approach due to the lack of scientific data (WPRFMC 2009a, 2009b). WPRFMC currently manages fisheries in the Western Pacific as five assemblages (or management units) under two fishery ecosystem plans (WPRFMC 2009a, 2009b). These assemblages include (1) bottomfish and seamount groundfish, (2) crustaceans, (3) precious corals, (4) coral reef ecosystems, and (5) pelagic species. Because all proposed activities will occur on land there is no EFH in the proposed construction footprint. However, EFH is designated offshore within the action area. EFH management units are described below and **Table 4-1** presents the fishery assemblages and lifestages with EFH in the action area:

Bottomfish and Seamount Groundfish. In the Northern Mariana Islands, the species complex EFH has been designated for two groups of bottomfish, deep-slope bottomfish (shallow water and deep water) and seamount groundfish complexes. EFH is designated in the action area for both groups. The managed bottomfish species have sustainable recreational, subsistence, and commercial fisheries. Habitat Areas of Particular Concern for bottomfish at Tinian include escarpments (underwater steep slopes or long cliffs) and slopes between depths of 131 and 919 feet (40 and 280 meters) (DON 2015).

Crustaceans. EFH has been designated in the action area for two groups of crustaceans, spiny and slipper lobsters and Kona crabs. The spiny lobster is the managed crustacean most likely to comprise a fishery in Tinian, although there is likely only recreational or subsistence fishing. There are no Habitat Areas of Particular Concern for crustaceans in the CNMI (DON 2015).

Coral Reef Ecosystems. EFH has been designated in the action area for two groups of corals (currently harvested corals and potentially harvested corals), based on the ecological relationships among species and their preferred habitat. The EFH for coral reef ecosystems in Tinian encompasses the entire water column and benthic substrate to a depth of 100 meters (DON 2015).

Pelagics. EFH has been designated for three groups of pelagic species in the action area, temperate species, tropical species, and sharks. Trolling is the most popular fishing method for the pelagic fishing industry. Skipjack tuna (*Katsuwonus pelamis*), yellowfin tuna (*Thunnus albacares*), and dolphinfish (*Coryphaena hippurus*) are the most commonly targeted species. The EFH for pelagic species lie above seamounts and banks and are defined as Habitat Areas of Particular Concern for pelagic species (DON 2015).

Table 4-1. Fishery Assemblages and Lifestages with EFH Designated in the Action Area

Fishery Assemblage	Lifestage				
	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Bottomfish and Seamount Groundfish¹	Water column	Water column	Water column, bottom habitat	Water column, bottom habitat	None Designated
Crustaceans^{1,2}	None designated	Water column	Bottom habitat	Bottom habitat	None Designated
Precious Corals^{1,3}	None designated in the action area.				
Coral Reef Ecosystems^{1,3}	Water column, bottom habitat				
Pelagic Species⁴	Epipelagic zone (water surface to depths of approximately 200 m)	Epipelagic zone (water surface to depths of approximately 200 m)	Water column	Water column	None Designated

Notes:

¹ WPRFMC 2009a

² Spiny lobsters (*Family Palinuridae*), slipper lobsters (Family Scyllaridae), and Kona crab (*Ranina ranina*) are the only group of crustaceans with EFH designated in the action area.

³ EFH is not designated by lifestage for precious corals and coral ecosystems.

⁴ WPRFMC 2009b

5. Existing Conditions and Environmental Baseline

This section describes the current conditions and baseline of the following selected environmental factors: topography, geology, and soils; land use; water resources; and the nearshore marine environment. See the *Revised Draft Environmental Impact Statement for Divert Activities and Exercises, CNMI* for additional information on the existing conditions and environmental baseline at the Tinian International Airport, seaport, and surrounding region (USAF 2015).

5.1 Topography, Geology, and Soils

5.1.1 Regional Geology

Tinian and the other southern Mariana Islands and comprised of volcanic rock (tuff and breccias) covered in coralline and algal limestone. Limestone rock predominates, and covers more than 95 percent of the surface of the island (University of Guam 2002, DON 2010a). Geology at Tinian International Airport consists of Mariana limestone (DON 2010b). In some areas, soils are very thin and very hard limestone outcrops or is close to the ground surface.

In the coastal regions, older coralline and algal limestone is overlain by Holocene limestone and raised beach and reef deposits. Most of the shoreline on Tinian consists of limestone cliffs with sea-level caverns, cuts, notches, and slumped borders. Beach deposits are composed of medium- to coarse-grained calcareous sands, gravel, and rubble interspersed in exposed limestone. Reef development occurs primarily on the western coast, with minor fringing or apron reef development on the northern, eastern, and southern coasts (DON 2010a).

The presence of limestone indicates that karst topography could be present. Limestone is a soluble rock primarily composed of calcium carbonate; on Tinian, the source of calcium carbonate is primarily from coral reef. Karst is a distinctive topography formed by dissolution of underlying soluble rocks by surface water or groundwater. Karst is characterized by caves, sinkholes, and subsurface drainage. These dissolution features are created when rainwater, which is slightly acidic, dissolves carbonate rocks, such as limestone. **Figure 5-1** depicts the types of subsurface karst development on carbonate islands such as Tinian, although not all cave types occur on all carbonate islands (Stafford et al. 2005). Although karst topography does exist on Tinian, no karst features were detected at the Airport during site investigations or were noted during geologic investigations in 2000 or 2005 (University of Guam 2002, Stafford et al. 2005).

5.1.2 Physiography and Topography

Tinian is composed of five limestone plateaus at varying elevations, separated by steep slopes and escarpments. Tinian International Airport occurs within the Central Plateau physiographic province. The Central Plateau, located within the central portion of the island, is isolated by steep slopes and scarps associated with north-south trending faults.

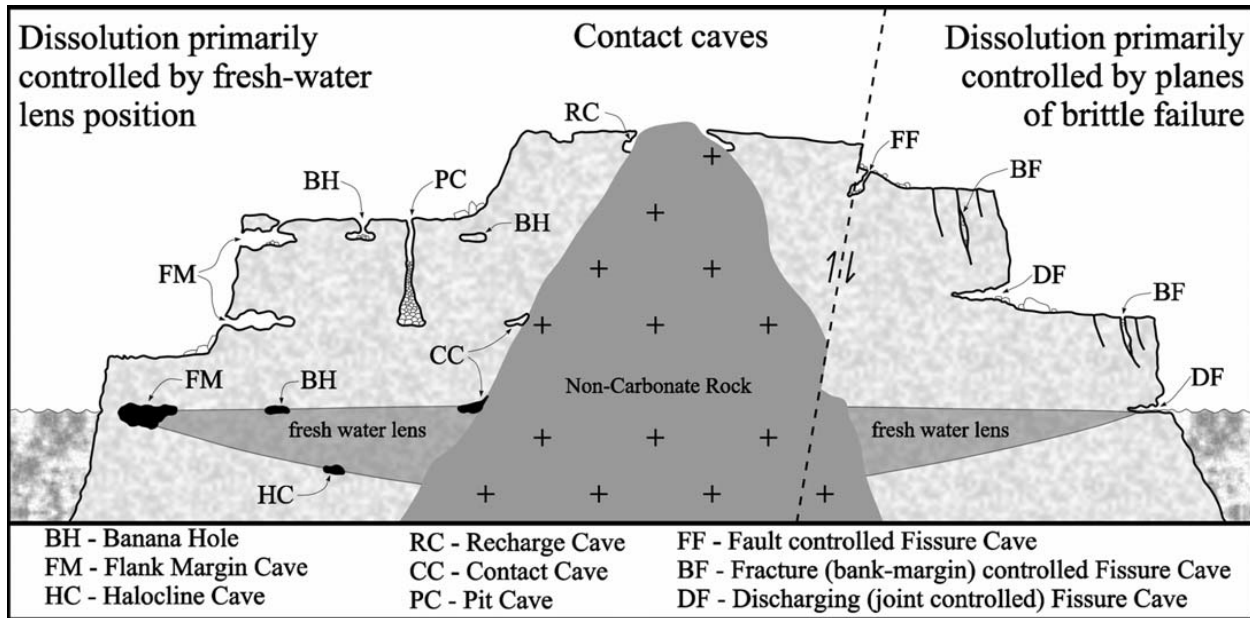


Figure 5-1. Types of Subsurface Karst Development on Carbonate Islands (Stafford et al 2005)

At Tinian International Airport, topography is relatively flat, and elevations range from approximately 61 to 100 feet above sea level (DON 2010b, USGS 1999). Elevation surrounding the airstrip drops towards the sea to the east and west. A depression exists between the taxiway and airstrip west of the terminal/apron area. The area is believed to have been excavated and used as a borrow pit.

Soil profiles on limestone regions are shallow and highly porous, (University of Guam 2002).

Table 5-1 lists the characteristics of soils that occur on Tinian. Soil mapping units that occur on the north side of the Tinian International Airport are Dandan-Chinen and Chinen-Urban Land. Soils at the port area are Shioya loamy sands. All soils within areas to be developed by the Proposed Action are previously disturbed and considered to be moderately to highly erodible (CNMI SWARS 2010).

Table 5-1. Characteristics of Soils Mapped on Tinian

Mapping Unit	Texture	Location	Ksat ¹	Characteristics
Shioya	Loamy sand	Port	(2.0 to 20.00 inches/hour)	Very deep, excessively drained, level to nearly level soils
Dandan-Chinen	Loam	Tinian North	(0.6 to 2.0 inches/hour)	Shallow and moderately deep, well drained, nearly level to strongly sloping soils.
Chinen-Urban Land	Urban land	Tinian North	(0.6 to 2.0 inches/hour)	Shallow, well-drained, nearly level, and Urban land

¹Capacity of the most limiting layer to transmit water

Sources: USDA NRCS 2015, DON 2010b

5.2 Land Use

Tinian International Airport. Tinian International Airport is owned and operated by the Commonwealth Port Authority under the Commonwealth Ports Authority Act. The airport is situated on approximately 1,400 acres of land. The airport is designated as urban/buildup and the area surrounding the airport is designated primarily as Agricultural or Undeveloped/Site in a Natural State by the CNMI Department of Public Lands (DON 2010b). Much of that airport is covered with impervious or semi-impervious surfaces such as the runway, taxiway, and aircraft parking ramp; terminal; vehicle parking lot; and other developed areas. Most of the undeveloped land at the airport, such as the land surrounding the runway and taxiway, is maintained as mowed fields, and much of the surrounding area is vegetated with secondary forests and scrub dominated by tangantangan (*Leucaena leucocephala*). The undeveloped land surround the airport also includes existing impervious surfaces. The Divert project would include construction on approximately 6 acres of existing developed land.

Port of Tinian. The Port of Tinian is situated on the southwestern coast of Tinian. It contains three piers, a small boat ramp, and a bulk fuel plant. The Tinian Harbor has undergone emergency repairs of the sea wall, bollards, and fenders and therefore continues to supports some shipping vessels. It is owned and operated by the Commonwealth Port Authority. The port is designated as Urban/Buildup and the area surrounding the port includes public and private land and is designated as a mixture of Private Land, Agricultural, and Undeveloped/Site in a Natural State by the CNMI Department of Public Lands (DON 2010b).

5.3 Water Resources

Groundwater. All fresh groundwater on Tinian originates as rainfall. Tinian receives approximately 80 inches of annual rainfall with distinct wet (July through September) and dry (February through March) seasons (CNMI BECQ and GEPA 2006). On average, 58 percent of the rainfall occurs during the wet season between the months of July and November and 14 percent of the annual rainfall occurs during the dry season from January through April. The remainder is distributed in the transition months between wet and dry season (AECOS and Wil-Chee 2009). Approximately 7 percent of the annual rainfall becomes runoff, approximately 37 percent recharges the groundwater, and approximately 56 percent is evapotranspired. Thus, most of the precipitation on Tinian either evaporates or percolates into the limestone substrata (Gingerich 2002).

Tinian is composed of permeable limestone that overlies a relatively impermeable volcanic foundation. The main source of drinking water on Tinian is the basal freshwater lens aquifer in the high-permeability limestone (Takpochao Limestone) overlying low-permeability volcanic rock (Gingerich 2002). The basal freshwater lens extends from 2 to 4 feet above mean sea level to about 80 to 160 feet below sea level at its deepest point (DON 2010c).

Surface Water. There are no perennial or intermittent streams on Tinian. The limestone plateaus of Tinian are generally far too porous to support stream or wetland development and most precipitation either evaporates or percolates into the highly permeable limestone substrata; however, rates of runoff have not been previously studied or quantified. Rough

estimates of runoff from similar limestone areas of Saipan range from 6 to 12 percent of rainfall (Gingerich 2002).

Surface water on Tinian is restricted to wetlands that occur on areas of impermeable clay that impound rainwater. These wetlands are entirely dependent on precipitation as a water source. In periods of drought, the water level in these wetlands drops and open water dramatically decreases. There are several wetland areas on Tinian, the largest of which is Hagoi (36 acres) in the northern part of the island. Other Tinian wetlands are smaller than Hagoi and considered ephemeral because they are not large enough to sustain during periods of low rainfall. The Sisoyan Makpo wetland once supported open water, but municipal groundwater pumping significantly altered the water levels (DON 2010a).

There are no wetlands within or near areas where facilities will be developed at the Tinian International Airport or seaport. The closest wetland that is downgradient of the proposed project is the Makpo wetland, which is more than 1.5 miles southeast of the site. .

A very large depression occurs between the taxiway and runway of Tinian International Airport and was previously used for excavation of fill material. In addition, another large depression occurs south of the taxiway. These depressions do not permanently hold water, but likely temporarily hold water during heavy rainfall events.

Flood Zones. Since the elevation of the island is relatively uniform and there is little surface water runoff, flooding is not an important natural hazard on Tinian. FEMA has designated several isolated flood hazard areas on Tinian as Flood Zone A (see **Figure 5-2**), which are areas with a 1 percent annual chance of flooding. Zone A areas on Tinian are unpopulated areas and include the Hagoi wetland and portions of North Field, Tinian International Airport, and the Makpo wetland (DON 2010a).

According to FEMA Flood Insurance Rate Map Historic Community Panel Number 750001 0040 B (Effective Date May 15, 1991), three areas designated as Flood Zone A occur near the Tinian International Airport runway and two areas occur north of the runway (FEMA 1991). These flood zones are associated with depressions created by former excavation activities described in the previous section.

Nearshore Waters. Coastal waters surrounding Tinian serve as the ultimate discharge area for all surface runoff from the island. Tinian International Airport spans two watersheds. The western portion of Tinian International Airport occurs in the Puntan Daiplolamanibot Watershed, which drains west into the Philippine Sea. The eastern portion of Tinian International Airport occurs within the Masalok Watershed, which drains northeast into the Pacific Ocean (CNMI BECQ 2010). The proposed Port of Tinian fuel site occurs within the Makpo Watershed, which drains west-southwest into the Philippine Sea (CNMI BECQ 2010).

The CNMI Bureau of Environmental and Coastal Quality (BECQ) monitors and reports on water quality in the CNMI. The most recent reporting data available from that agency was collected in 2011 to 2013 and reported in 2014 (CNMI BECQ 2014b). According to that report, the most common sources of water quality degradation in the CNMI are from “1) Point sources such as failing sewer lines and other wastewater collection and treatment systems; and 2) Non-point

sources (NPS) such as: sedimentation from secondary coral roads, uncontrolled erosion from construction sites; and livestock overgrazing; other pollutants carried in stormwater from paved roads and other developments; and fecal bacteria from livestock.”

The coastal waters of the Puntan Daiplolamanibot and Masalok watersheds were classified as impaired (Category 5) in 2010 due to orthophosphate pollution, the source of which is unknown. The coastal waters of the Makpo Watershed are impaired (Category 5) due to low dissolved oxygen levels, biocriteria, and orthophosphate pollution caused by onsite treatment systems and urban runoff (CNMI BECQ 2010). They remained classified as Category 5 impaired waters in 2013 (CNMI BECQ 2010, 2014b).

All coastal marine waters of Tinian, except those in the Carolina watershed, are considered “not attaining” for at least one designated use. Therefore, all coastal marine waters of Tinian, except those in the Carolina watershed, are classified as Category 5 under the Consolidated Assessment and Listing Methodology followed by the CNMI BECQ (CNMI BECQ 2014b). Category 5 is defined as

Available data and/or information indicate that at least one designated use is not being supported or is threatened, and a [total maximum daily load] is needed (a use is threatened if a waterbody is currently attaining [water quality standards], but is expected to not meet WQS by the next listing cycle).

Based on biological monitoring of coral reefs and seagrass assemblages, CNMI BECQ (CNMI BECQ 2014b) ranked coastal marine waters in the Masalok (east of the Tinian International Airport) and Puntan Daiplolamanibot (west of the airport) watersheds as good and fair, respectively. However, both watersheds, in addition to the Makpo watershed, are classified as impaired for the Aquatic Life and Propagation use designation (CNMI BECQ 2014b). Sites on Tinian were reported to “show ecologically resilient assemblages, with notable maintenance or improvement in coral metrics...” (CNMI BECQ 2014b).

5.4 Marine Environment

The Tinian coastline is generally lined with rocky intertidal areas, steep cliffs, and the occasional sandy beach or mudflat (DON 2015). Tinian’s shoreline has 13 beaches (10 on the west coast [leeward side] and 3 on the east coast [windward side]) and is mostly undeveloped, except for Tinian Harbor (DON 2015). These beaches are primarily comprised of medium to coarse sands, gravel, and coral rubble (DON 2013). Coral reef habitat (hard bottom) covers approximately 8.9 square miles (23 square kilometers) of the area around Tinian (Brainard 2012). There are approximately 0.10-0.15 square miles (0.28-0.38 square kilometers) of reef flat around Tinian (Brainard 2012). Emergent vegetation is not found around Tinian (International Business Publications, USA 2011), but seagrass is found along the coast (DON 2015).

As described in Brainard 2012, surveys conducted in 2003, 2005, and 2007 recorded moderately low sand cover around Tinian, suggesting that the substrate around the island is predominantly hard. The distribution of habitat complexity and live coral cover around Tinian were both varied and in some areas appeared to associate well with each other (Brainard 2012).



Figure 5-2. Tinian Surface Waters and Flood Zones (DON 2015)

The island of Tinian is virtually surrounded by shore-attached fringing reef (Riegl and Dodge 2008; Brainard 2012). Coral, starfish, sea urchins, sea cucumbers, mollusks, and tube worms are the most common types of invertebrates found on Tinian reefs (DON 2010b). Most of the reef habitat on Tinian has 1-10 percent hard coral cover, but patches exceeding 50 percent cover do occur, particularly in shallow waters (Minton et al. 2009; Brainard 2012; DON 2014; Heenan et al. 2015). These patches are on the northwest side of Tinian between Lamnibot Bay and Ustri "Cross" Point. Survey data from 2009, 2011, and 2014, indicates that the predominate benthic group is turf algae (~48% cover), followed by macroalgae (~19% cover), hard corals (~16% cover), and encrusting algae (~5% cover) (Heenan et al. 2015). Sites surveyed in 2009, 2011, 2014 were primarily classified as mid-depth (20 – 60 ft) forereef sites, but also included shallow (0 – 20 ft) and deep (60 – 200 ft) forereef sites (Heenan et al. 2015). In 2014, the water depth of the sample sites ranged from approximately 10 to 100 ft. Shore-attached fringing reefs are the dominant reef habitat type on Tinian. Well-developed reef crests are less common and there are seven well-developed reef flats on Tinian. Most of the surface water runoff from the Tinian International Airport and surrounding area flows toward Unai Barcinas and Unai Leprosarium. All of the reef flats on Tinian are extremely small compared with well-developed reef flat habitats in the Mariana Islands such as Tumon Bay and Piti Bay on Guam (DON 2015).

Fish biomass was higher in 2011 than 2009 and 2014 for all consumer groups (groups of fish based on diet) (planktivores, secondary consumers, and piscivores) except primary consumers. Note that primary consumers include herbivores and detritivores, while secondary consumers include omnivores and benthic invertivores. Survey data from 2009, 2011, and 2014 indicates that fish biomass by consumer group generally followed the same trend as the southern Mariana Island region. That is, largest biomass is from the primary consumers, followed by secondary consumers, piscivores, and planktivores (Heenan et al. 2015).

This page intentionally left blank.

6. Analysis and Conclusions

6.1 Analysis

The proposed Divert project on Tinian includes both a construction phase and implementation phase. The project is completely on land and neither the construction phase nor the implementation phase include in-water activities. Thus, the proposed project would not directly affect the marine environment, but has the potential to indirectly affect EFH in the action area through stormwater runoff, sedimentation, and spills of hydrocarbons and other pollutants.

In order to avoid these indirect effects, the USAF will develop and implement plans and procedures, design facilities, and adaptively manage their actions and facilities, as described in **Section 3** and as summarized below, to ensure that runoff of stormwater and sediment are minimized and controlled during and after construction. Implementation of these measures will work to avoid and minimize stormwater discharge into the nearshore marine environment. The design of facilities will be based on conservative assumptions and safety factors with regard to the amount of existing and new impervious surface, rainfall totals, and soil permeability. For example, the post-construction stormwater management system will be designed to accommodate the volume and peak discharge flows from, at a minimum, the 95th percentile storm. In the event of a rainfall event that is larger than the design event, the stormwater management system will contain much of the sediment and runoff from the new impervious surfaces. Any additional flows resulting from the construction of those surfaces that are not contained by the stormwater system will be a minute portion of the total runoff of water from the watershed that will flow into the ocean. Thus, the Divert Project is expected to result in no or an unmeasurably small increase in the total amount of sediment and fresh water flowing into the ocean.

The USAF would also implement an adaptive management approach that would be based on information obtained during regular monitoring and inspection of temporary and permanent stormwater management controls. The USAF would identify any structures that are damaged or are not functioning in accordance with applicable standards and repair them. The stormwater management system would also be improved when necessary to ensure that all planned objectives and required standards continue to be met.

In addition, the USAF will develop and implement spill control and prevention measures to prevent the release of fuel or other contaminants from the built environment. In the unlikely event of a spill of hazardous materials, transport of pollutants is not expected because of the measures described in **Section 3**, including that all fuel storage facilities will be designed with secondary containment greater than 100% capacity of the fuel tank. Therefore, in the event of a spill, hazardous materials are not expected to leave the site but would instead be contained within the existing infrastructure.

In summary, and based on the following site conditions and project plans, the Divert project would result in no or a minimal reduction in the quality or quantity of EFH surrounding Tinian and thus would have no or minimal adverse effects on EFH.

These conclusions are based on the following.

- No activities would be conducted in marine waters.
- There would be no net increase of activity at the Tinian harbor and no modification of in-water facilities there.
- During construction the USAF and its contractors will manage stormwater runoff in accordance with the USEPA NPDES Construction General Permit and will develop the following plans and comply with the following standards.
 - A SWPPP will be developed and implemented in accordance with USEPA guidelines (**Section 3.1.1.3**)
 - An ESCP will be developed and implemented in accordance with CNMI regulations (**Section 3.1.1.2**).
 - Standards for erosion and sediment control recommendations in the CNMI and Guam Stormwater Management Manual would be met (**Section 3.1.1.1**).
- The site-specific stormwater management measures developed and implemented during construction will
 - Accommodate runoff from the 10-year frequency storm
 - Retain onsite sediment in runoff from a minimum of the 1.5-inch precipitation event (**Section 3.1.1.4**).
- The USAF will halt or modify work that could result in the release of sediments from construction sites when corals are spawning.
- Facilities at the Tinian International Airport and seaport will be designed to
 - Accommodate the volume and peak discharge flows from, at a minimum, the 95th percentile storm
 - Maintain predevelopment hydrology
 - Prevent any net increase in stormwater runoff (**Section 3.1.2.1**)
- Low Impact Development strategies will be used for long-term stormwater infrastructure design (**Section 3.1.2.2**).
- Performance standards in the CNMI and Guam Stormwater Management Manual will be incorporated into the design and operation of facilities, including
 - Limiting impervious cover to 70 percent or less where feasible
 - Treating stormwater runoff that would be discharged into jurisdictional wetlands or coastal waters to the maximum extent feasible
 - Using infiltration methods to maintain predevelopment recharge and runoff rates
 - Implementing stormwater BMPs that remove 80 percent of TSS (**Section 3.1.3.2**).
- The USAF has identified a preliminary set of BMPs and site-specific measures (**Section 3.1.2.4**) and an example conceptual design (**Section 3.2**) that can feasibly be implemented to meet the objectives and requirements for stormwater management and spill prevention control. That example conceptual design:
 - Demonstrates that there is sufficient space to retain surface water runoff from planned facilities
 - Takes advantage of the highly permeable soils to account for rapid infiltration of rainfall

- Is feasible because the USAF has adequately programmed and validated resources to implement the design and fully comply with the regulatory requirements described here
- Spill prevention and control measures and plans will be developed and implemented to prevent the release of pollutants and to respond to unanticipated events, including
 - Implementation of fuel storage design standards and inspection requirements such as secondary containment, tank integrity testing, and facilities that meet the requirements of API 650 (**Section 3.3.1.1**) and USAF Technical Order 37-1-1. (**Section 3.3.1.4**)
 - Development and implementation of a SPCC Plan to prevent, control, and report all spills (**Section 3.3.1.2**)
 - A FRP to address catastrophic spills (**Section 3.3.1.2**)
- Facilities will be designed and adaptively managed to ensure that any stormwater discharges meet CNMI Water Quality Standards (**Section 3.4**).
- All stormwater management and spill prevention structures and practices will be monitored during construction and operation in accordance with the SWPPP and CNMI regulations to ensure proper function. The stormwater management system will be adaptively managed and improved when necessary to ensure that all planned objectives and required standards are being met (**Sections 3.1.1.5, 3.1.2.5, and 3.3**).

6.2 Conclusions

Through the design, implementation, and adaptive management of an effective storm water management system, the increase in impervious surface required for the Divert project would result in no or an unmeasurably small increase in the amount of sediment and fresh water flowing into the marine environment. In addition, fuel storage and delivery facilities, and other infrastructure where hazardous materials are stored, will be designed to prevent and contain spills of hazardous materials, and plans will be developed and implemented to maintain that infrastructure and respond rapidly in the unlikely event of a spill. The USAF therefore concludes that the Divert project would have no or minimal adverse effects on EFH.

This page intentionally left blank.

7. References

- | | |
|-------------------------|---|
| AECOS and Wil-Chee 2009 | AECOS, Inc. and Wil-Chee Planning, Inc. (Wil-Chee). 2009. Guam and Tinian Wetlands Inventory (Final). September 2009. |
| Brainard 2012 | Brainard, R. <i>Coral Reef Ecosystem Monitoring Report of the Mariana Archipelago: 2003 to 2007</i> . National Oceanic and Atmospheric Administration Fisheries, Pacific Islands Fisheries Science Center. Retrieved from http://www.pifsc.noaa.gov/cred/hmapping/monitoring_report_mariana_archipelago_2003-2007/index.php |
| CNMI BECQ 2010 | Commonwealth of the Northern Marianas Bureau of Environmental and Coastal Quality (CNMI BECQ). 2010. Final Commonwealth of the Northern Mariana Islands Integrated 305(b) and 303(d) Water Quality Assessment Report. November 2010. |
| CNMI BECQ 2014a | CNMI BECQ. 2014. Commonwealth of the Northern Mariana Islands Water Quality Standards. 2014. |
| CNMI BECQ 2014b | CNMI BECQ. 2014. Final Commonwealth of the Northern Mariana Islands Integrated 305(b) and 303(d) Water Quality Assessment Report. September 2014. |
| CNMI BECQ and GEPA 2006 | CNMI BECQ and Guam Environmental Protection Agency. 2006. CNMI and Guam Stormwater Management Manual. October 2006. |
| CNMI SWARS 2010 | CNMI Statewide Assessment and Resource Strategies Council. 2010. Statewide Assessment and Resource Strategies. Available online: < http://www.wflccenter.org/islandforestry/cnmi.pdf > Accessed 26 January 2012. |
| DOD 2015 | Department of Defense. 2015. UFC 3-210-01 Low Impact Development. 01 June 2015. |
| DON 2010a | Department of Navy (DON). 2010. <i>Mariana Islands Range Complex (MIRC) Environmental Impact Statement (EIS)</i> . July 2010. |
| DON 2010b | DON. 2010. Joint Guam Program Office (JGPO) <i>Guam and CNMI Military Relocation EIS</i> . July 2010. |
| DON 2010c | DON. 2010. <i>Update of the Integrated Natural Resources Management Plans for Navy Leased Lands on Tinian and Farallon De Medinilla. Plan Years 2010-2015</i> . 29 May 2010. |

- DON 2013 DON. 2013. *Draft Mariana Islands Training and Testing (MITT) Environmental Impact Statement /Overseas Environmental Impact Statement*. Retrieved from <http://mitt-eis.com/DocumentsandReferences/EISDocuments/NoticeofIntentinFederalRegister.aspx>
- DON 2014 DON 2014. *Final Coral Marine Resources Survey Report in Support of the Commonwealth of the Northern Mariana Islands Joint Military Training Environmental Impact Statement/Overseas Environmental Impact Statement*. Prepared by Tetra Tech for Naval Facilities Engineering Command, Pacific.
- DON 2015 (DON). 2015. Commonwealth of the Northern Mariana Islands Joint Military Training Draft Environmental Impact Statement/Overseas Environmental Impact Statement. April 2015.
- FEMA 1991 Federal Emergency Management Agency. 1991. Flood Insurance Rate Map, Tinian Island. Historic Community Panel Number 750001 0040 B. Effective Date 15 May 1991.
- Gingerich 2002 Gingerich, Stephen. 2002. "Geohydrology and Numerical Simulation of Alternative Pumping Distributions and the Effects of Drought on the Ground-Water Flow System of Tinian, Commonwealth of the Northern Mariana Islands U.S. Department of the Interior." Available online: <<http://hi.water.usgs.gov/publications/pubs/wri/wri02-4077.pdf>>. Accessed 11 January 2012.
- Heenan et al. 2015 Heenan, A. McCoy, K., J. Asher, P. Ayotte, K. Gorospe, A. Gray, K. Lino, J. Zamzow, and I. Williams. 2015. Ecological monitoring 2014 - stationary point count surveys of reef fishes and benthic habitats of the Northwestern Hawaiian Islands, Mariana Islands, and Wake Atoll. Pacific Reef Assessment and Monitoring Program Data Report. NOAA Pacific Islands Fisheries Science Center. PIFSC Data Report DR-15-001.
- International Business Publications, USA 2011 International Business Publications, USA. 2011. *Northern Mariana Islands Country Study Guide. Volume 1 Strategic Information and Developments*. Washington, D.C. Retrieved from <http://books.google.com/books?id=DCPtTfe49lIC&printsec=frontcover#v=onepage&q&f=false>
- Minton et al. 2009 Minton, D., V. Brown, K. Dugger, T. Flores, K. Foster, P. Houk, J. Iguel, C. Kessler, S. Kolinski, T. Schils, J. Starmer, N. Sukraj, M. Tenorio, and M. Trianni. 2009. *Marine resource surveys of Tinian, Commonwealth of the Northern Mariana Islands (Volume I)*. Prepared for Headquarters, United States Army Corps of Engineers.

Riegl and Dodge 2008	Riegl, B. M. & Dodge, R. E. 2008. <i>Coral Reefs of the USA (Vol. 1)</i> . Dordrecht, The Netherlands: Kluwer Academic Publishers.
Stafford et al 2005	Stafford, K. W., Mylroie, J. E., & Jenson, J. B. (2004). <i>Karst geology of Aguijan and Tinian, Commonwealth of the Northern Mariana Islands cave inventory and structural analysis of development</i> (No. Water and Energy Research Institute Technical Report #106). Retrieved from http://www.weriguam.org/reports/item/karst-geology-of-aguijan-and-tiniancnmi-cave-inventory-and-structural-analysis-of-development.html
University of Guam 2002	University of Guam. 2002. Karst Geology and Hydrology of Tinian and Rota (Luta), CNMI: A Preliminary Report. September 2002.
USAF 2015	United States Air Force. 2015. Revised Draft Environmental Impact Statement for Divert Activities and Exercises, CNMI Pacific Air Forces, Joint Base Pearl Harbor-Hickam, Hawaii. October 2015
USAF 2014.	USAF. 2014. Engineering Technical Letter (ETL) 14-1: Construction and Operation and Maintenance Guidance for Storm Water Systems. Available at: https://www.wbdg.org/ccb/AF/AFETL/etl_14_1.pdf
USDA NRCS 2015	United States Department of Agriculture Natural Resources Conservation Agency. 2015. Web Soil Survey. Available online: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx . Accessed 10 September 2015
USGS 1999	U.S. Geological Survey. 1999. Topographic Map of the Island of Tinian. Available online: http://www.lib.utexas.edu/maps/topo/pacific_islands/txu-oclc-060797124x-tinian.jpg . Accessed 13 February 2012.
WPRFRMC 2009a	Western Pacific Regional Fishery Management Council (WPRFMC). 2009. Fishery Ecosystem Plan for the Mariana Archipelago.
WPRFRMC 2009b	WPRFMC. 2009. Fishery Ecosystem Plan for Pacific Pelagic Fisheries of the Western Pacific Region

This page intentionally left blank.

USAF Responses to Comments (18 March 2016) from NMFS on the Supplemental Information Supporting Determination for No Adverse Effect of the Divert Project on Essential Fish Habitat

1.1 - Coordination History

- Update to reflect
 - February 10, 2016: USAF's official selection of the Modified Tinian only alternative as the preferred alternative.
 - March 2, 2016: USAF informed (via phone) HCD of plans to complete EFH consultation during the NEPA process. During that same call, USAF informed HCD that its analysis was done for the north location as it has the largest impermeable surface (although both north and south options remain under consideration) for Tinian.
 - March 14, 2016: USAF emailed a document entitled "Supplemental Information supporting Determination for No Adverse Effect of the Divert project on Essential Fish Habitat" and power point slides highlighting noteworthy information from that document to NMFS HCD.
 - March 15, 2016: USAF-NMFS meeting on USAF's supplemental information and next steps for completing EFH consultation during the NEPA phase.

Response: The coordination history will be updated to include these activities

2. - Project Description

- When presenting the bullets for why the North or South designation won't influence EFH this may be a good opportunity to include a 3rd bullet to strengthen where it says 'can be designed' to include use of long-term monitoring to ensure standards are met, and use of adaptive management to ensure that the design of needed infrastructure for stormwater and spill control continues to meet requirements.

Response: The following bullet will be added:

- for either option, long-term monitoring and adaptive management will be used to ensure that standards are met and that infrastructure installed to manage stormwater and control spills continues to function as designed and to meet applicable requirements.

2.3 - Action Area

- Does the 6 to 12 percent of stormwater movement off site as surface runoff represent an average? How does this number change during heavy precipitation events?

Response: As stated in the text, this is a "rough estimate" of the range of runoff on Tinian, as documented in the cited reference (Gingerich 2002, Geohydrology and Numerical Simulation of Alternative Pumping Distributions and the Effects of Drought on the Ground-Water Flow System of Tinian, Commonwealth of the Northern Mariana Islands U.S. Department of the Interior). The Air Force is not aware of any other references or information available to determine the change in runoff rate on Tinian during heavy precipitation.

3.1.1.1 - Erosion Control (Standard 9)

- Soft coral spawning periods occur during the spring and may also benefit from consideration. The rainy season and hard coral spawning seasons overlap.

Response: Text has been added stating that the USAF will contact the CNMI BECQ to determine when soil exposing work should be halted during spring rainfall events when soft corals are spawning.

3.1.1.4 Stormwater Site-Specific Measures

- This is where the 10-year frequency storm and 90% precipitation event (1.5 inch) measure is first discussed for construction sites. It is worth noting that in the last 10 years for Tinian, tropical storm Melor (2009) dropped 3.2 inches of rain and in 2012 Sanvu dropped 4.65 inches. As weather extremes become more common in the face of climate change we can expect similar precipitation levels (as seen in recent years) from future 10-year storm events. Later in the document the 95% of 2.2 inches is introduced and the 25-year storm event is mentioned. Recommend clarity throughout the document where these terms are used, why they are used, and how we justify discounting the trend in recent storm precipitation rates.

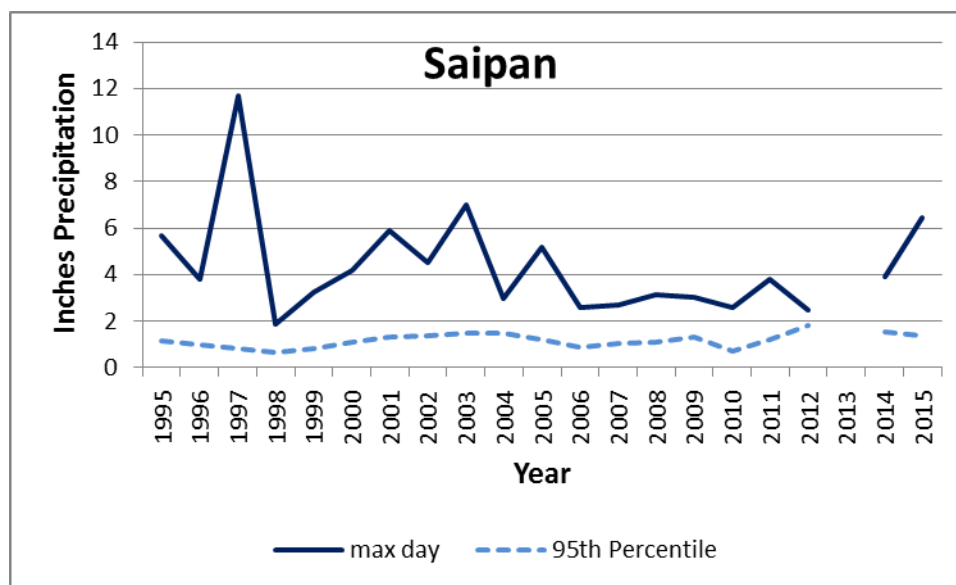
Response: As described in **Sections 3.1.1.4 and 3.1.2.1**, the USAF will design construction stormwater management structures to accommodate the 10-year frequency storm (i.e., the 90% event), and will use the USEPA's 95th percentile method to determine the design storm to be used as a guide in designing post-construction, long-term stormwater management structures. Consideration of these storm events and methods for designing stormwater management features are recommended by the CNMI BECQ, EPA, or both. Text in the EFHA clearly state when the 90% storm event or 95th percentile method will be applied to design considerations.

The precipitation level of 1.5 inches associated with the 10-year frequency storm, and to be considered for temporary stormwater management measures (i.e., to be deployed during construction), is defined and recommended by the CNMI BECQ and GEPA Stormwater Management Manual (2006). Should the CNMI BECQ update the design storm standard using more recent rainfall events, the USAF would design the construction stormwater controls to that standard.

The design capacity of long-term stormwater management structures will be based on the precipitation level associated with a "design storm." As stated in **Section 3.1.2.1**, the USAF will use the value of 2.2 inches calculated using the USEPA's 95th percentile methodology and reported in the DOD Unified Facilities Criteria (UFC 3-210-10). As stated in **Section 3.2**, use of a design storm level of 2.2 inches that was developed for Guam is conservative because rainfall on Guam is higher than on more northern islands. For example, average annual rainfall during 1994 to 2014 was 97.6 and 79.7 inches on Guam and Saipan, respectively, and the average annual maximum daily rainfall on those islands was 6.2 and 4.2 inches, respectively.

Precipitation data recorded on Saipan (<http://www.ncdc.noaa.gov/cdo-web/>), about 18 miles northeast of Tinian International Airport, was examined to determine whether it would be beneficial to re-calculate the design storm parameter using up-to-date data. As displayed in the figure below, data from 1994 to 2014 do not show a substantial increasing trend in the annual 95th percentile of daily rainfall or maximum daily rainfall. For example, the 95th percentile of daily rainfall for the years 1995 to 2004 (1.12 inches) was similar to the value for 2005 to 2014

(1.22). In summary, use of the design storm value for Guam is very conservative for Tinian, and recalculating the design storm parameter using more recent precipitation data from the CNMI would not result in a higher or more protective value.



3.1.1.5 Stormwater Monitoring During Construction

There is still a lot of monitoring related information being deferred to SWPPP development.

- How often will monitoring occur?
- Who will do it?
- Will it be done during and after rain/storm events?
- Where will monitoring occur (catchments versus surface runoff versus areas of infiltration)?
- What are the threshold triggers for adaptive management?

Response:

- *How often will monitoring occur?* Before construction, AF plans to establish a baseline for stormwater quality by sampling at the existing stormwater outlets. This data will be used to assist with the development AF stormwater monitoring plan and permit. The monitoring frequency will be as prescribed by the Storm water Construction General Permit. It may occur once, twice, or more in a given duration of the rainfall in order to have representative samples. Once a baseline of post construction water quality data is established, a long term sampling frequency can be planned and is typically for the AF two to four times per year, though this varies greatly depending on variables including having enough rain to be able to obtain a stormwater sample..
- *Who will do it?* AF personnel or AF contractor personnel located on site. However, sometimes the stormwater sample is not collected as intended for various reasons that make it difficult or dangerous for personnel to do the collecting. For example, workers who are in certain parts of the base may not be aware of the rain event occurring somewhere else on base, or the rain event occurs outside the duty hours, or there are electrical activities associated with the storm to have anyone expose to lightning strikes. Mainly because of these situations, the AF often uses automatic sampler-data logger

system to collect the samples. The automatic sampler-data logger system can record pertinent data such as temperature, pH, flow rate, duration, date and time. It can also collect the samples and store them until retrieved by AF/contractor personnel for transport to a laboratory for analysis of parameters specifically stated in the Construction General Permit. Typical parameters include, but are not limited to, dissolved, suspended solids, pH, oil and grease, heavy metals, etc.

- *Will it be done during and after rain/storm events?* In order to collect samples, there will have to be a flow in the drainage outfall – wet weather flow. So it must be done during a rain event that results in a steady flow at the outfall.
- *Where will monitoring occur* (catchments versus surface runoff versus areas of infiltration)? The monitoring probably will occur on the surface at the outfall of the stormwater drainage located at the southwest end of the runway. This would be done when there is steady wet weather flow in the existing stormwater outfall.
- *What are the threshold triggers for adaptive management?* The adaptive management will be triggered when the analyses of the collected stormwater samples show excursions above the limits specified in the permit. The adaptive management entails elimination or minimization of the pollutants that exceed the limits. For example, if suspended solid values exceed the limit, best management practice can be improved to ensure that the exposed bare surface at the construction site is covered with tarps when it is raining. If concentrations of oil or grease are detected above limits, the management will ensure that there is no leak from any vehicles or equipment and that on-site fuel dispensers are under a protective roof, etc.

3.1.2.1 Approach to Stormwater Infrastructure Design

- Recommend reviewing and updating the 95th percentile given recent storms. Why are events like tropical storms Melor and Sanvu excluded from analysis?

Response: As stated above, recalculating the 95th percentile with more recent data from the CNMI would not result in a higher value.

- The document states post-construction rates are not to exceed pre-construction for rate, volume, duration and temperature. What about nutrient loads, petroleum products and other considerations?

Response –This section of the document describes the approach for control of stormwater during the construction phase. The standards for concentrations of nutrients, petroleum products, and other water quality considerations are described in **Section 3.4**. As stated in that section, concentrations in stormwater runoff would not exceed the thresholds documented in the CNMI Water Quality Standards. As previously stated above, before construction, AF plans to establish a baseline for stormwater quality by sampling at the existing stormwater outlets. This data will be used to assist with the development AF stormwater monitoring plan and permit.

3.1.2.2 - Retention of Stormwater Volumes

- Will all of these tools be viable given the short retention times of the karst topography? How will adjustments be made and ensure that dirty runoff is not impacting the water table or nearshore waters through intrusion?

Response: This section describes the process flow for developing appropriate Low Impact Development for the site. The purpose of this section is to describe the steps and processes

that the USAF will take to identify the stormwater management controls that could be used for the Divert project. The first three steps in the process flow for identifying LID strategies are site utilization, filtration, and interception/infiltration. As documented in the conceptual site design in **Section 3.1.2.5**, and because of the site conditions, the USAF will first try to develop LID strategies using these three steps, notably interception and infiltration. As applicable and necessary, retention strategies could also be used to intercept additional rainfall beyond the 95th percentile storm event. USAF does not expect that this project will result in a reduction in filtration of water through the vadose, or an impact to the water table or nearshore waters. The stormwater control system should enhance recharge filtration, in part by shifting some infiltration to the east, thus enhancing recharge filtration since the flows will travel through a longer path to the ocean.

3.1.2.3 Performance Standards for Site Development

- Standard 3 (*All stormwater runoff generated from the project will be adequately treated to the maximum extent technically feasible if it would result in discharge into jurisdictional wetlands or inland and coastal waters of CNMI*): This is too vague. For example, what level of treatment occurs at Anderson? Is water that runs off from impervious surfaces and then percolates into the groundwater also treated in some way?

Response: This list of performance standards represents a summary of the standards that were considered in development of the conceptual site design as recommended in the CNMI and GEPA Stormwater Management Manual. More specific information on treatment is provided in **Section 3.4**, which describes the CNMI Water Quality Standards. As described in Sections 3.1 and 3.2, stormwater management practices will be implemented to retain surface flows on site, promote direct infiltration, and prevent surface runoff. Because there will be no direct discharge into inland or coastal waters during normal rainfall events (i.e., when treatment could be effectively conducted), treatment probably will not be part of the USAF plan for compliance with stormwater and water quality regulations.

The methods used to manage stormwater at Andersen AFB are very dissimilar to those likely to be used on Tinian. Because of the high permeability of the limestone at Andersen AFB, water infiltrates quickly into the subsurface to recharge the groundwater lens (the Northern Guam Sole Source Aquifer). The rainwater recharges the aquifer through 114 or so Class V Underground Injection Control (UIC) wells. The UIC wells are regulated under the SDWA. All of Andersen UIC wells are thus permitted under the SDWA requirements. Because the aquifer is the drinking water source, the recharged water must comply with the Drinking Water Standards. These standards are determined from criteria based on adverse effects on human health. Andersen must ensure compliance with these standards to the maximum achievable extent. Best management practices are used to eliminate, minimize pollutants that are dissolved or suspended in the recharged water. The principal objective of pollution prevention technique is to reduce exposure of contaminants. For example, hazardous materials are stored indoor, industrial activities are conducted inside of buildings, accidental spills are expeditiously picked up and sites quickly remediated. The wells themselves are screened off for debris, flotsam and jetsam. There is no other treatment for the Andersen UIC wells in place outside of best management practices for pollution prevention and control. In the final analysis, this approach has proved effective for all this time, while meeting stringent drinking water standards.

- Standard 4 (*Pre-development annual groundwater recharge rates and runoff rates to coastal waters will be maintained by promoting infiltration through the use of structural and non-structural methods*): Recommend doing some studies to set a baseline for this information.

Response: This list of performance standards represents a summary of all standards that were considered in development of the conceptual site design as recommended by the CNMI and GEPA Stormwater Management Manual. EPA methodology, as adapted by DOD, recommends use of the 95th percentile storm event as the design storm for development of stormwater management controls and ensuring that pre-development hydrology is maintained. As part of planning and permitting process, baseline percolation rates and other parameters necessary to properly design and permit the stormwater management system will be measured at the Tinian Airport. Preconstruction water quality also will be measured on the site and at the outflow of the airport drainage system

- Standard 5 (*Structural stormwater BMPs will be designed to remove 80 percent of the average annual post development total suspended solids (TSS) load and match or exceed predevelopment infiltration rates, as possible*): This seems pretty great if it is adequately monitored and managed.

Response: This list of performance standards represents a summary of all standards that were considered in development of the conceptual site design as recommended by the CNMI and GEPA Stormwater Management Manual. As described in **Section 3.1.2.5**, the USAF will conduct monitoring and adaptive management post-construction to ensure that all BMPs are functioning as designed.

- Standard 6: This is where the 25-year storm is introduced, which is realistically more like a 5-6 inch event based on what we have seen over the last 8 years.

Response: As stated above, precipitation data for Saipan do not show an increase in maximum daily precipitation over time. In addition, the value for the 25-year storm event reported in the CNMI BECQ and GEPA Stormwater Management Manual (2006) encompasses a 5- to 6-inch event.

In the event of a rainfall event that is larger than the design event, the stormwater management system will contain much of the sediment and runoff from the new impervious surfaces. Any additional flows resulting from the construction of those surfaces that is not contained by the stormwater system will be a minute portion of the total runoff of fresh water from the watershed that will flow into the ocean. Thus, the Divert Project is expected to result in no or an unmeasurably small increase in the total amount of sediment flowing into the ocean, and fresh water flowing into, and falling on, the ocean.

3.1.2.5 - Stormwater Monitoring after Construction

- The use of adaptive management is an excellent component of this effort. How has this worked on Anderson? Successes, failures, lessons learned?

Response: As described above the stormwater management system on Andersen AFB is very different from that being considered for the Divert project, and any lessons from the monitoring of that system would not necessarily apply to this project. The USAF has had substantial success at implementing adaptive management for the evaluation and improvement of natural

resource protection programs, such as those implemented on Guam to protect rare species, reduce invasive species, and enhance natural habitats and systems.

3.2 - Summary of Stormwater Management Conceptual 5 Design

- Factor 8: Will any treatment occur within the proposed infield area?

Response: The goal of slowing and retaining stormwater runoff in the infield is to increase infiltration at a location further inland away from shorelines than would be the case if sheet runoff were allowed. This will enhance recharge filtration since the flows will travel through a longer path to the ocean, increasing the treatment of the water. Because all water is expected to be captured and quickly infiltrate, technically no onsite treatment is planned.

- Factor 8: How would the infield have done during either tropical storm Melor or Sanvu?

Response: The infield should provide sufficient area for full infiltration within a few hours. A storm event of 4.65 inches of rainfall would result in about 40 acre-feet of water falling on the new impervious surfaces. This amount of water would add about 4" to the amount to be retained/infiltrated across the infield (a total of about ~8.65" to be controlled). As described in Section 5.1, the ground beneath the soil has a K_{sat} of 0.6 to 2.0 inches per hour, which indicates that all stormwater would infiltrate in less than 24 hours. The design and permitting phases of this project will review stormwater management capacity to ensure projects maintain the original hydrology onsite consistent with stormwater management standards and low impact development requirements.

3.3.1.2 - Spill Prevention Control and Countermeasures Plan

- Spill Control Section. This section should also include details about the expected fate and transport of pollutants from main storage areas based on hydrology, proposed management measures, retention times, etc. Where is it most likely to go and how fast will it get there?

Response: Transport of pollutants and petroleum products is not expected because all fuel storage facilities will be designed with secondary containment greater than 100% capacity of the fuel tank. Therefore, in the event of a spill, fuel is not expected to leave the site but would instead be contained within the existing infrastructure.

Should containment fail, and secondary containment fail, and onsite response fail, we would expect the release to move through the subsurface, attenuate to some degree and rapidly migrate down gradient, and eventually be released at the coastline. Once released, fuels are very difficult to recover; hence, prevention, rather than interception of flows or recovery, is the critical goal.

3.4 - Water Quality Criteria

- Ensure that changes in freshwater volume and discharge rates to the nearshore environment are also considered when looking at threats to coral reefs.

Response: As described in Section 3.4, water quality standards require compliance with a "salinity: criteria. This criteria level is "No alterations of the marine environment shall occur that would alter the salinity of marine or estuarine waters more than 10 percent from ambient conditions or which would otherwise adversely affect the indigenous biota and sedimentary

patterns, except when due to natural causes.” In addition, the AF will be required to maintain runoff rates at preconstruction rates. Therefore, the stormwater management system will be designed to ensure that there will be no or minimal changes in volume and rate of freshwater discharge or salinity and that release of freshwater does not alter marine conditions by more than 10 percent. It might be possible to reduce runoff rates below preconstruction levels through BMPs, planning, and permitting, though this may not be appropriate for the site or surrounding ecosystem.

- Table 3-3. What petroleum products or daughter products may be of concern here? In California MTBE was a regular gasoline additive at one time until it was better understood how very small amounts could impact drinking water. Are there components in the jet fuel that may be toxic in very small amounts either directly or once they degrade? Heavy metals?

Response: The chemistry of JP8 fuel which will be primarily used by the AF is provided below.

Benzene, alkyl benzenes, toluene, xylene and naphthalenes are typically the compounds that are considered for environmental sampling for JP8, along with total petroleum hydrocarbons (TPH) and combustion products such as poly-aromatic hydrocarbons (PAHs). Heavy metals are not known to be intentionally added into JP8. Additives are also referenced below. Depending on the goals and objectives of the SWPP sampling plan, any of these compounds or others might be selected. One issue that will have to be considered will be sample holding times for the analysis. It may be preferable to select a compound based upon its ability to remain stable as a sample long enough to provide accurate results. Due to the technical nature of the effort, and the complexity of the subject, EPA and AF prefer to make such determinations during the sampling plan development process.

JET-PROPULSION FUEL 8

Molecular weight:	≈180
Synonyms:	Jet fuel JP-8, MIL-T-83133B, AVTUR
Freezing point, maximum:	-47°C
Boiling point:	175-300°C
10% recovered, maximum:	205°C
End point, maximum:	300°C
Flash point, minimum:	38°C
Vapor pressure:	0.52 mm Hg (10°C) 1.8 mm Hg (28°C)
Specific gravity, kg/L, 15°C, Minimum:	0.775
Maximum:	0.840
Heating value, Btu/lb, minimum:	18,400
Viscosity, maximum at -20°C:	8
Composition:	C ₈ –C ₉ aliphatic hydrocarbons, vol % ≈ 9% C ₁₀ –C ₁₄ aliphatic hydrocarbons, vol % ≈ 65%; C ₁₅ –C ₁₇ aliphatic hydrocarbons, vol % ≈ 7%; aromatics, vol % ≈ 18%.

	Aromatics typical of cracked gasoline and kerosene include benzene, alkyl benzenes, toluene, xylene, indenes, naphthalenes.
Conversion factors at standard temperature and pressure:	1 ppm = 8.0 mg/m ³ 1 mg/m ³ = 0.12 ppm

Source: PHYSICAL AND CHEMICAL PROPERTIES OF MILITARY FUELS." National Research Council. *Permissible Exposure Levels for Selected Military Fuel Vapors*. Washington, DC: The National Academies Press, 1996. doi:10.17226/9133.

JP8 is a kerosene-based fuel used in military jets (USAF, NATO, Japanese Self-Defense Forces), tanks and other fighting vehicles, and portable heaters. It contains benzene, toluene, xylenes and naphthalene, as well as additives (e.g., diethylene glycol monomethyl ether or ethylene glycol monomethyl ether).

https://www.osha.gov/dts/chemicalsampling/data/CH_248748.html

References:

Risher, J., Bittner, P.M. and Rhodes, S.: *Toxicological Profile for Jet Fuels (JP-5 and JP-8)*. Atlanta, GA: Agency for Toxic Substances and Disease Registry, Centers for Disease Control, 1998, 167 pp.

Ritchie, G.D., Still, K.R., Rossi, J. III, Bekkedal, M. Y.-V., Bobb A.J. and Arfsten, D.P.: Biological and health effects of exposure to kerosene-based jet fuels and performance additives. *J. Toxicol. Environ. Health B Crit. Rev.* 6(4): 357-451, 2003.

5.3 – Water Resources

- The last sentence in this section references ecological resilience. This sounds like a quote from Maynard et al. 2015, and should be more thoroughly explored if relative resilience is going to be a factor in decision making for these sites.

Response: This information is a quote from the CNMI Integrated 305(b) and 303(d) Water Quality Assessment Report and is provided to describe the current, baseline conditions as described by the resource management agency in the region. This information is not explicitly considered as a factor in decision making for the site. Rather, the factors that were considered are described in **Section 3.2**, Summary of Stormwater Management Conceptual Design.

5.4 – Marine Environment

- The NOAA CRED program has data from 2009, 2011 and 2014 regarding the marine environment which should be used to more thoroughly analyze the marine environment. Brainard 2012 is missing that information.

Response: A summary of 2009-2014 fish biomass and hard coral cover data will be added to this section.

6. Summary and Conclusions

- As differences exist between Endangered Species Act (ESA) and EFH consultations, we recommend caution with use of the following terms: negligible, insignificant, not measurable, and discountable for EFH. The above terms are typically used for “not likely to adversely affect” determinations for ESA informal consultations and not for characterizing “no adverse effect” determinations for EFH.

Response: This terminology will be modified per comment.

- Insignificant - Define insignificance or don't use at all. The term is misleading due to statistical connotation.

Response: This terminology will be modified per comment.

- Reduce to a discountable level possibility of a release. Does USAF plans to model this or perform a cost benefit or economic analysis of some kind to ensure the risk is below a certain threshold? Appears as a misleading use of terms.

Response: The intent of the statement is that the risk of a spill will be very low. The text will be modified to clarify. Inspections and monitoring will be conducted as required by regulations and as described in **Section 3.3.1.4** to ensure that the identified standards and criteria are met and thus that the risk of a spill remains very low.

- "Discountable" and "insignificant" - These are not terms typically used to characterize EFH.

Response: This terminology will be modified per comment.

- None to minimal adverse effect on EFH would be expected - Assuming there will be follow-through for all of the activities detailed in this document.

Response: The conclusions have been revised to reflect that there would be no or minimal adverse effects on EFH from the project described in the assessment.

7. References

- Ensure all references captured in the document are included in this section.

Response: All references will be included per comment.

**NMFS Letter to USAF Concurring with Minimal Adverse Impacts to Essential Fish Habitat,
April 2016**



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Regional Office
1845 Wasp Blvd., Bldg 176
Honolulu, Hawaii 96818
(808) 725-5000 • Fax: (808) 725-5215

Mr. Mark Ingoglia
Chief, Environmental and Real Property Branch
Pacific Division Air Force Civil Engineering Center
25 E St, STE C-200
JBPH-H, HI 96853-5420

April 12, 2016

Dear Mr. Ingoglia,

On March 28, 2016, the Habitat Conservation Division (HCD) of the National Marine Fisheries Service (NMFS) Pacific Islands Regional Office received the U.S. Air Force's (USAF) electronic memorandum request for Essential Fish Habitat (EFH) consultation, the EFH Assessment for Divert Activities and Exercises CNMI, and USAF Responses to Comments (18 March 2016) from NMFS on the Supplemental Information Supporting Determination for No Adverse Effect of the Divert Project on EFH. These USAF documents were updated and addressed NMFS March 18, 2016 comments on the draft EFH Assessment.

The purpose of the proposed action is to assure that a divert airfield location to Andersen Air Force Base (AAFB), Guam exists and can support operational divert requirements, joint military training and exercises, and humanitarian relief operations within a reasonable distance to AAFB and the Philippine Sea. The USAF proposes to develop and enhance an existing civilian airfield on Tinian in CNMI. The improved airfield will: 1) support one aircraft squadron and its associated personnel for periodic exercises and humanitarian assistance, 2) accommodate an estimated 720 military aircraft take-offs and landings per year, and 3) build necessary facilities to park, fuel and maintain those aircraft.

The Modified Tinian Alternative is located within the coastal zone, with close proximity to nearshore marine resources, including EFH. These waters support various life stages for the management unit species (MUS) identified under the Western Pacific Regional Fishery Management Council's Pelagic and Marianas Fishery Ecosystem Plans (FEPs). The MUS and life stages of this nearshore ecosystem specifically include: eggs, larvae, juveniles and adults of Coral Reef Ecosystem MUS (CRE-MUS), Bottomfish MUS (BMUS), Crustacean MUS (CMUS) and juveniles and adults of Pelagic MUS (MPMUS). We offer the following comments, pursuant to the Essential Fish Habitat (EFH) provision (§305(b)) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA; 16 U.S.C. 1855(b)).



NMFS appreciates the responsiveness and level of detail the USAF has put into addressing our concerns related to EFH threats from stormwater and potential pollutant spills. A large increase in impervious surface poses a real threat to EFH due to changes in water quality and water quantity reaching the nearshore environment. The potential for changes to runoff patterns and submarine groundwater discharge make it impossible to guarantee that there will be no adverse effect to EFH associated with such a large construction project. However, based on the proposed stormwater management approach and USAF commitment for monitoring and adaptive management NMFS has determined that the adverse impacts to EFH will be minimal. NMFS looks forward to continued coordination with USAF as the Stormwater Pollution Prevention Plan (SWPPP) is developed for the Tinian airport, especially as it relates to the development of monitoring protocols and thresholds that will guide adaptive management responses.

We appreciate the opportunity to comment on this project and wish to continue engaging and working with the USAF where needed to support the project purpose, while ensuring the appropriate level of protection of NOAA trust resources. If you have any questions regarding this determination, contact Steve McKagan at Steven.McKagan@noaa.gov.



Gerry Davis
Assistant Regional Administrator
Habitat Conservation Division

APPENDIX C

CZMA Compliance Supporting Documentation



**STATUS OF FEDERAL AGENCY COASTAL ZONE MANAGEMENT ACT
NEGATIVE DETERMINATION FOR PROPOSED ACTIONS IN THE
COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS**

A coastal zone negative determination (ND) assessment was submitted to Commonwealth of the Northern Mariana Islands (CNMI) Coastal Resources Management Office (CRMO) on May 18, 2012. The assessment encompassed all proposed actions described in the June 2012 Draft Environmental Impact Statement for Divert Activities and Exercises, Guam and Commonwealth of the Northern Mariana Islands. Pursuant to 15 CFR Section 930.35(c), the CNMI CRMO was not obligated to respond to the ND, and since the CNMI CRMO did not respond to the ND within 60 days, the CNMI CRMO concurrence with the ND was presumed. The USAF provided the Revised Draft EIS to the CNMI CRMO during the public review period for that document. The USAF received no additional correspondence from the CNMI CRMO.

THIS PAGE INTENTIONALLY LEFT BLANK

**Coastal Zone Management Act (CZMA) Consistency Determination:
Negative Determination Notice; May 2012**



DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES


MAY 18 2012

MEMORANDUM FOR MS. RITA C. CHONG
DIRECTOR, COASTAL RESOURCES MANAGEMENT OFFICE
COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS
P.O. BOX 10007
SAIPAN, MP 96950

FROM: HQ PACAF/A7
25 E Street, Suite D-306
JBPH-H, HI 96853

SUBJECT: Coastal Zone Management Act (CZMA) Consistency Determination:
Negative Determination Notice for Divert Activities and Exercises

1. Headquarters Pacific Air Forces (HQ PACAF) wishes to inform you of its negative determination under the CZMA regarding the subject proposed action. The Draft Environmental Impact Statement (DEIS) for Divert Activities and Exercises, (Atch 1) proposes federal action to improve an existing airport or airports and associated infrastructure in support of expanding mission requirements in the western Pacific.
2. HQ PACAF proposes to construct facilities and infrastructure at an existing airport or airports to support a combination of cargo, fighter, and tanker aircraft with associated personnel to support periodic joint military exercises and humanitarian assistance and disaster relief (HADR) efforts during times of need. Occasional emergency divert landings could also occur at the proposed improved airport. This action considers both the Saipan International Airport and the Tinian International Airport. HQ PACAF considers the Saipan Airport to be the preferred alternative location as outlined in the Draft EIS. (Atch 2)
3. The DEIS explains the details associated with our proposed action and we refer you to the executive summary for an overview of the proposed action.
4. Should you or your staff have any questions regarding this proposed action, please contact my POC, Mr. Mark Petersen at (808) 449-1078, or at mark.petersen.1@us.af.mil.


for KARL S. BOSWORTH
Director, Installations and Mission Support

- 2 Attachments:
1. Draft EIS for Divert Activities and Exercises, Guam and CNMI
 2. Summary of the Proposed Action

Summary of the Proposed Action

Section 2.1 of the draft Divert Activities and Exercises EIS describes the proposed action, which includes the following:

1. **Construction Phase.** The KC-135 Stratotanker (KC-135) aircraft is indicative of tanker or cargo aircraft used by the USAF in the western Pacific. The KC-135 aircraft is being used as the design aircraft for cargo and tanker aircraft in the EIS. The following elements would be designed and then constructed or improved at the selected airport or airports:
 - a. *Runway* – Potential extension of the runway up to 10,000 feet in order to meet optimal KC-135 requirements as identified by PACAF Strategy, Policy and Requirements Division. Options that would expand the runway to less than 10,000 feet, or not at all are also analyzed.
 - b. *Parking apron* - The parking aprons at the airport selected for expansion would need to meet design requirements for KC-135 aircraft.
 - c. *Associated pavement markings, lighting, and navigational aids*- All pavement markings, lighting, and navigational aids would be installed, upgraded, or relocated, as appropriate.
 - d. *Temporary munitions storage area*- The temporary munitions storage area would mainly be used to store munitions safely from diverted aircraft until the aircraft could return to its place of origin, or proceed to its planned destination.
 - e. *Hazardous cargo pad and arm/disarm pad*- The hazardous cargo pad would mainly be used to safely handle munitions or other hazardous cargo from diverted aircraft until the aircraft could return to its place of origin, or planned destination. The arm/disarm pad would be used to perform final safety checks on aircraft before takeoff by aircraft maintenance personnel. The arm/disarm pad would also be used to perform initial safety checks on aircraft after landing. The hazardous cargo pad could be designed and constructed to double as an arm/disarm pad.
 - f. *Aircraft hangar*- The hangar would be a closed structure to store aircraft awaiting maintenance or being repaired.
 - g. *Maintenance facility* – The maintenance facility would be used as an Aircraft Maintenance Unit/Aircraft Spares Management and for storage to assist aircraft at the proposed airfield.
 - h. *Jet fuel receiving, storage, and distribution infrastructure*- USAF proposes to maintain a 30-day supply of jet fuel to be able to provide fuel to aircraft through a hydrant system. In order to maintain the 30-day supply of jet fuel, a combination of fuel tanks including bulk storage and smaller operating tanks would be required. The ability to receive jet fuel on the island and ability to transfer it to the airfield would also be required.
 - i. *Billeting*- Temporary billeting, including medical, transportation, and dining services, would be required for the personnel supporting aircraft operations.
2. **Implementation Phase.** It is assumed that any mix of joint fighter, cargo, and tanker aircraft, not to exceed the design capabilities of the airport, could be diverted to or exercised from the airport

or airports selected for improvements. KC-135s would remain the design aircraft for the implementation phase. The following activities would occur at the selected airport or airports:

- a. *Unscheduled/unplanned divert landings*- Unscheduled aircraft landings, also known as “divert” landings would occur; divert landings would occur at these airports if other locations in the western Pacific, for example Andersen Air Force Base (AFB), are unavailable for landing, such as during emergencies or natural disasters.
- b. *Unscheduled/unplanned humanitarian airlift staging*- Humanitarian airlift staging, including non-combatant evacuation operations (NEOs), would also occur at the airport or airports proposed for improvements in the event of an emergency or disaster.
- c. *Military exercises*- A limited number of scheduled joint, combined, and unit-level military training activities and exercises, as described and analyzed in the Mariana Islands Range Complex (MIRC) EIS, for which a Record of Decision (ROD) was issued on July 20, 2010, would occur. It is assumed that both unit-level training and joint military exercises would each take place annually for a combined total of 60 days per year at the airport or airports selected for improvement. This EIS addresses only the ground movements and immediate approaches and departures at the airport or airports selected for development (e.g., take-offs and landings) during unit-level training and exercises. Actual air warfare and air logistics training (i.e., above 10,000 feet) are addressed by the MIRC EIS, for which a ROD was issued on July 20, 2010.
- d. *Jet fuel receiving, storage, and distribution*- A fuel delivery system, jet fuel storage, and means of fuel resupply would be required for the airport or airports selected for improvements. The ability to store fuel and transfer fuel from the receiving port to the airfield would be developed.
- e. *Billeting*- Temporary billeting, including medical, transportation, and dining services, would be required for the personnel supporting aircraft operations. This could be accomplished by using under utilized local hotels or temporary facilities consisting of tents and other support on or near airport property.

Pursuant to Section 7 of P.L. 3-47 [2 CMC Section 1513] federal lands in the CNMI are excluded from the CNMI Coastal Resource Management Program. The proposed fuel tank location at the Saipan harbor would be on federal property and would be constructed with adequate containment in accordance with all applicable standards and requirements. The proposed temporary munitions storage area at the Tinian alternative site would be located within the Military Leased Area on Tinian. No “spillover impacts” on the coastal zone would be anticipated from either of these proposed facilities.

The USAF evaluated whether the construction phase and implementation phase of the Proposed Action at GSN or TNI would have reasonably foreseeable direct or indirect effects on any coastal use or resource of the coastal zone of the CNMI. The USAF determined that with the measures in place that are outlined in the table of required permits and consultations in the attached EIS, that the proposed action would be consistent to the maximum extent practicable with the enforceable policies of the CNMI Coastal Resource Management Program. The USAF would comply with permitting and consultation requirements ensuring consistency with the CNMI Coastal Resources Management Program.

**Coastal Zone Management Act (CZMA) Consistency Determination:
Additional Correspondence Regarding Revised Draft EIS; October 2015**



DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

MEMORANDUM FOR MS FRAN CASTRO
DIRECTOR
COASTAL RESOURCES MANAGEMENT OFFICE
P.O. BOX 501304
SAIPAN, MP 96950

FROM: HQ PACAF/A5X
25 E Street, Suite E-200
JBPH-H, HI 96853

SUBJECT: Coastal Zone Management Act (CZMA) Consistency Determination:
Notice for Divert Activities and Exercises, Commonwealth of the Northern Mariana Islands
(CNMI)

1. The Revised Draft Environmental Impact Statement (EIS) for Divert Activities and Exercises, CNMI proposes federal action to improve an existing airport or airports and associated infrastructure in support of expanding mission requirements in the western Pacific. The Revised Draft EIS is a modification of the original Divert Activities and Exercises Draft EIS that was released for public review on June 9, 2012 ChST (June 8, 2012 EDT).
2. The Revised Draft EIS analyzes potential environmental impacts of modified versions of the alternatives originally presented in the June 2012 Draft EIS. Since June 2012, the USAF determined the policies and objectives of NEPA would be best served by preparing and releasing a Revised Draft EIS and to seek additional comments on changes made as a result of comments received on the 2012 Draft EIS.
3. The USAF determined that the Proposed Action in the 2012 Draft EIS was consistent to the maximum extent practicable with the CNMI Coastal Management Plan. The Negative Determination (ND) for CNMI was submitted after release of the 2012 Draft EIS. Pursuant to 15 CFR §930.35(c), because the CNMI Coastal Resources Management Office (CRMO) did not respond to the ND within 60 days, CNMI CRMO concurrence with the ND was presumed. Pursuant to 15 CFR §930.46, supplemental coordination on a prior consistency determination is required only when there are substantial changes to the proposed activity. As there are no substantial changes to the proposed activity in the current Revised Draft EIS, no supplemental coordination is required, and thus the ND prepared for the 2012 Draft EIS remains applicable.
4. Two Revised Draft EIS public meetings are scheduled, one in Saipan and one in Tinian. The public meetings will be open house format with poster stations. U.S. Air Force representatives will be available to provide information and answer questions about the Revised Draft EIS, and comments will be accepted at the meetings.

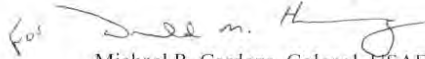
The open house meetings will be held in accordance with the following schedule:

- **Saipan:** Wednesday, November 4, 2015, 5:00 p.m. to 8:00 p.m., Saipan Multipurpose Center, Susupe Village
- **Tinian:** Thursday, November 5, 2015, 6:00 p.m. to 8:00 p.m., Tinian Elementary School Cafeteria

5. The enclosed Compact Disc contains a copy of the Revised Draft EIS for your review. You may send written comments on the Revised Draft EIS to: Ms. Ashley Connor, PACAF/PA, 25 E Street, Suite G-108, Joint Base Pearl Harbor-Hickam, HI 96853, ATTN: PACAF Divert Marianas EIS or by email at ashley.conner.3@us.af.mil. You may also obtain other related documents, local reading room locations, and submit comments online via the project website at www.PACAFDivertMarianasEIS.com. The USAF is accepting comments through November 30, 2015 EDT/December 1, 2015 ChST.

5. Should you or your staff have questions regarding this proposed action, please contact my Program Manager, Mr. William Grannis, (808) 449-4049, or by email at william.grannis@us.af.mil.

Very Respectfully,


Michael R. Cardoza, Colonel, USAF
Chief, Strategy and Plans Division
Headquarters, Pacific Air Forces

THIS PAGE INTENTIONALLY LEFT BLANK