Commonwealth of the Northern Mariana Islands
OFFICE OF THE GOVERNOR
Bureau of Environmental and Coastal Quality
DEQ: P.O. Box 501304, DCRM: P.O. Box 10007, Saipan, MP 96950-1304
DEQ Tel.: (670) 664-8500/01; Fax: (670) 664-8540
DCRM Tel.: (670) 664-8300; Fax: (670) 664-8315
www.deq.gov.mp and www.crm.gov.mp

Eloy S. Inos
Governor

Ralph DLG. Torres
Lt. Governor

Frank M. Rabauliman
Administrator

Frances A. Castro
Director, DCRM

July 21, 2015

Naval Facilities Engineering Command, Pacific
Attn: 09PA, Public Affairs Office
258 Makalapa Drive, Suite 100
JBPHH, HI 96860-3134.

Dear Department of Defense:

The Commonwealth of the Northern Mariana Island's (CNMI) Bureau of Environmental and Coastal Quality (BECQ) has reviewed the CNMI Joint Military Training (CJMT) Draft Environmental Impact Statement/Overseas Environmental Impact Statement (DEIS/OEIS).

BECQ is composed of:

Department of Environmental Quality (DEQ) mandated to administer programs and mitigate contamination related to water quality, air quality, hazardous materials, earthmoving and erosion in the CNMI (PL 3-23);

Division of Coastal Resources Management (DCRM) mandated to regulate activities impacting coastal resources of the CNMI by providing interagency collaboration, permitting and enforcement, monitoring, outreach and education, and restoration (PL 3-47).

BECQ has coordinated with the Lieutenant Governor's office to provide comments on the impacts of the CJMT as related to BECQ's particular mandates. BECQ-DCRM looks forward to further working with the CJMT team through the federal consistency process and expects to receive a federal consistency determination for the proposed activities as outlined in 15 CFR Part 930. Federal activities with foreseeable effects on the coastal zone must be compliant with the enforceable policies of DCRM's coastal management program to the maximum extent possible.

BECQ is available to work with the Department of Defense to inform and improve the CJMT EIS. Please contact us with any questions.

Sincerely,

Frank M. Rabauliman
Administrator

BUREAU OF ENVIRONMENTAL AND COASTAL QUALITY
DIVISION OF ENVIRONMENTAL QUALITY
DIVISION OF COASTAL RESOURCES MANAGEMENT

Comments on the Draft Commonwealth of the Northern Mariana Islands Joint Military Training Environmental Impact Statement/ Overseas Environmental Impact Statement

July 2015

Contents

Summary of Comments

BECQ has reviewed the CJMT DEIS to assess the accuracy and adequacy of the analysis as well as the implications of the proposed actions. The section headings below primarily follow the section headings used in Chapters 3 and 4 of the DEIS, with the exception of the "Process" and "Approach" sections.

Our summary comments are as follows:

Process

BECQ is concerned that the DEIS does not completely comply with all aspects of the NEPA process. This section outlines concerns regarding the DoD's purpose and needs statements, the suitability of the CNMI for the proposed training, the lack of alternatives offered in the DEIS, and the poor public outreach and agency coordination during the NEPA process. This section also outlines places the DEIS does not sufficiently address CNMI and federal laws.

Approach

BECQ is concerned that the DEIS operates on several false assumptions and definitions. The DEIS assumes there are no residents on Pagan which is untrue. The DEIS repeatedly uses the phrase "short term" to support the notion that there will be less than significant impacts but it is unclear what "short term" actually means. The DEIS repeatedly uses the word "may" in reference to mitigation, a stronger commitment to mitigation is needed. The DEIS does not acknowledge several important land uses including the planned Plumeria Resort on Tinian or the homesteading on Pagan. The DEIS also does not address how long the CJMT will go on for.

Geology and Soils

BECQ has several concerns regarding munitions and soil contamination, impacts to agriculture on Tinian, erosion control on Pagan, and the effects of bombing a volcano on Pagan.

Water Resources

BECQ is very concerned about munitions contaminating the waters of the CNMI. In this section BECQ asserts that contamination is possible, and more monitoring and baseline data is needed. BECQ is also concerned about the impacts to groundwater, which is owned by the CNMI. The use of LCACs and AAVs could also lead to water contamination issues. BECQ is also concerned about the effect of the proposed activity on wetlands.

Air Quality

BECQ asserts that the DEIS does not provide sufficient information for a meaningful analysis of air quality impacts. This is especially true in regard to munitions contamination and greenhouse gases.

Noise

The DEIS uses confusing and inconsistent threshold levels for making a determination on noise impacts. It appears that there will be noise impacts to schools, churches, and residential areas.

Land and Submerged Land Use

The Land and Submerged Land Use section of the DEIS does not account for planned developments on Tinian and Pagan, including the Alter City development (Plumeria Resort) on Tinian and homesteading in Pagan.

Recreation

The Recreation section of the DEIS does not adequately address the severity of the impact that the proposed military action will have on the current and planned recreational activities (including tourism) on Tinian. In this section BECQ points out various areas where the DEIS needs to offer more information.

Terrestrial Biology

BECQ is concerned about the CJMT's plan to relocate the Tinian Military Retention Land for Wildlife Conservation which is important habitat for the Tinian Monarch. The CJMT also plans to relocate the International Broadcasting Bureau (IBB). Proposed areas for relocation include the environmentally sensitive Sabana Conservation Area on Rota or Marpi in Saipan. BECQ would prefer to see the IBB not moved, at the least a more rigorous analysis for moving the IBB is necessary. BECQ is also concerned about effects to vegetation communities, wildlife, and special status species. The DEIS should be modified to show Significant Impacts to all Terrestrial Biology categories.

Marine Biology

BECQ is very concerned about the proposed construction of a boat ramp at Unai Chulu which will have direct effects to 10.3 acres of coral and indirect effects to an additional 10.3 acres. The DEIS underplays the effect to the Unai Chulu reef flat, claiming only 3% of Tinian's reef will be affected when in fact 30% of Tinian's reef flat will be affected. BECQ is concerned the DEIS underplays the effect of LCACs and AAVs to the environment during operations. This section also outlines concerns for marine flora, coral, non-coral invertebrates, fish and sea turtles.

Cultural Resources

The CJMT will significantly impact historical and cultural areas including Chamorro and Carolinian sites, World War II sites, and Japanese shrines. The DEIS says it will mitigate Significant Impacts to cultural resources but it does not say how. More information is needed on how impacts will be mitigated.

Visual Resources

The DEIS primarily considers ocean views in its Visual Resources chapter. However, the visual landscape also includes the surrounding forest and topography. The DEIS needs to take into account a larger definition of visual resources and change its determination to "Significant Impacts" for Visual Resources.

Transportation

BECQ is concerned about the impact of the CJMT to commuter flights and air traffic. The DEIS does not take into account Alter City's Plumeria Resort which could affect the CJMT's ground transportation plans. BECQ is also concerned about marine transportation. The DEIS does not address how traffic will increase at Tinian Harbor, nor does it address marine invasive species from hull fouling or ballast.

Utilities

The DEIS does not adequately address what will happen to solid waste generated on Tinian and Pagan. A more detailed plan must be offered. BECQ is also concerned about the use of reverse osmosis on Pagan which will create brine water that will need to be disposed of. Vast quantities of brine water can have significant environmental effects if not properly disposed of.

Socioeconomics and Environmental Justice

The DEIS holds an inaccurate view of what environmental justice is, claiming that since all Tinian residents will be affected similarly there is no issue. However, the people of the CNMI contain several distinct ethnic populations and much of Tinian is low-income. The DEIS must compare these populations to the United States as a whole. More emphasis must be given to cultural importance of the islands to the Chamorro and Carolinian people. Information on the health impacts to these populations should also be considered in greater detail.

Hazardous Materials and Waste

BECQ needs more information on the aboveground storage tanks (ASTs) to be used on Tinian. Placing ASTs near residential areas could pose a safety hazard. BECQ would prefer to see ASTs used on Pagan rather than gallon drums. More information is also needed on how hazardous waste will be shipped off Tinian and Pagan. Contamination of soils should also be addressed.

Public Health and Safety

The Public Health and Safety chapter of the DEIS focuses primarily on keeping civilians out of the MLA and posting fencing or signs warning civilians of activities in the MLA. BECQ is primarily concerned about the contamination of ground, water, and air resources (as outlined above) and how such contamination could affect the health of the people of Tinian.

Programmatic Analysis of Future Potential Project Components

The DEIS's treatment of the relocation of the International Broadcasting Bureau is so inadequate as to preclude meaningful analysis. An Alternative that includes the relocation of the IBB cannot be adequately evaluated unless a concrete relocation plan is selected and evaluated. The DEIS currently proposes to move the IBB to ecologically sensitive areas including Rota's Sabana Conservation Area or Marpi on Saipan.

Cumulative Effects

The Cumulative Effects chapter lists possible effects of various projects but makes no effort to quantify how the effects add up. The DEIS needs to describe and use a methodology for quantifying cumulative impacts.

Process

BECQ has several concerns regarding the way the NEPA process was conducted.

Purpose and Need

40 CFR 150.214 states that an EIS "should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public." The DEIS Purpose and Needs Statement, as written, is leading in that it precludes any consideration of other alternative sites within the Western Pacific other than the Northern Mariana Islands.

In regards to the leading "Purpose and Need" statement, the DEIS states the following:

- ***Page 1:*** "**Alternative**: Options to meet the purpose and need of the proposed action, which is to establish a unit level Range and Training Area…" The training area does not have to be in the CNMI in order to meet the "Statutory Mission" (p. 1-4) or to reduce training deficiencies in the Western Pacific.
- ***Page ES*-1:** "The proposed action is to establish a series of live-fire ranges, training courses, and maneuver areas *within the Commonwealth of the Northern Mariana Islands (CNMI)* to reduce existing joint service training deficiencies and meet the United States (U.S.) Pacific Command Service Components' unfilled unit level and combined level

training requirements in the Western Pacific." This statement apparently does not allow for the consideration of other areas beyond CNMI.

- ***Page ES-4:*** "The purpose of the proposed action is to reduce joint training deficiencies for military services in the Western Pacific." This is a more appropriate and neutral purpose and need statement.
- ***Page ES-6:*** Nowhere in the DEIS does Department of Defense (DoD) explain why "Tinian and Pagan collectively is the only combination of training locations that meets the purpose of and need for the proposed action". To comply with NEPA requirements any and all surveys and reports of how this conclusion was reached should be included in this assessment.

A more appropriate and neutral purpose and need statement would read, "The proposed action is to establish a series of live-fire ranges, training courses, and maneuver areas ~~within the Commonwealth of the Northern Mariana Islands (CNMI)~~ to reduce existing joint service training deficiencies and meet the U.S. Pacific Command Service Components' unit level and combined level military training requirements in the Western Pacific."

To be clear, there are a vast number of existing military installations on larger land masses throughout the Western Pacific (DoD 2009). These installations have an array of established training capabilities and firing ranges which can more easily be expanded to provide the combined level training required, and are inherently less susceptible to significant environmental impacts than a small archipelago with very limited resources. The Northern Marianas has very limited potable water supplies, and land mass on which to build infrastructures. Added to this, is the fact that DoD expressly states on Page 1-8, Section 1.3, that the Mariana Islands specifically, lack sufficient support facilities. This would be all the more reason for DoD to select alternative training locations with established training sites rather than the Marianas in which to expand. It would be a much wiser financial expenditure as well than starting from naught.

The DEIS references a 2009 *Institute for Defense Analyses Study.* The study, apparently, concluded that the CNMI and Guam, due to the strategic location of these islands, were the best location to meet their deficiencies. The study's conclusion is unsupported by any substantive information in the text. Unfortunately, the full report is not cited for further reading in the DEIS reference section in Chapter 7 either, leaving reviewers with no way to assess these conclusions. No link was provided for this study; a copy of the study is requested.

The DEIS references the 2013 *Training Needs Assessment: An Assessment of Current Training Ranges and Supporting Facilities in the US Pacific Command Area of Responsibility,* noting that "assured access would provide use of a permanent system of ranges" (p.1-10). The assumption is that while assured access is not guaranteed by foreign nations, it could be provided by the CNMI. It should be noted that land in Tinian is under a long-term lease and that permanent access is not guaranteed. It is also worth noting that this is the only time in the DEIS that the military notes

how long they would like to use CNMI lands. The current lease in Tinian expires in 2032 – is the current DEIS assuming lease renewal? If so, this should be included and discussed in the DEIS.

The 2013 *Training Needs Assessment* established "that the greatest number of training deficiencies existed in the Mariana Islands (i.e., Guam and the CNMI)" (p.1-10). The *Training Needs Assessment* is essentially a list of types of training ranges with a note on whether they exist in the CNMI or not. This argument is tantamount to saying "there are no firing ranges in the CNMI; therefore we must build firing ranges in the CNMI". The DEIS and its references do not sufficiently explain why training deficiencies cannot be fulfilled at other locations. Rather, it would require less funding to send troops to areas that already have built firing ranges; range placement decisions should conform with NEPA requirements to avoid and minimize negative impacts wherever possible.

Section 1.3.6 of the DEIS notes that "some of the 62 requirements were being met through other planning efforts" and therefore only 42 unfilled training requirements would be carried forward to the CNMI. It is unclear why the remaining 42 requirements could not also be met through other planning efforts.

The DoD notes that the Western Pacific region stretches from Hawaii in the east, to India in the west, north to Mongolia, and south to New Zealand. Why are the Mariana Islands the only feasible location when it has already been determined to be the least sufficiently equipped to support the "62 unfilled training requirements" (p. 1-10). The 2009 report appears to have been written in such a way as to leave no other conclusion, a prejudicial attempt to support the need after DoD has already determined where they wish to expand.

Again, the DEIS fails to consider military installations already in existence within Hawaii and other countries and to which DoD has assured access. Indeed, Page 2-6, Section 2.2.2, DOD states, "combined level training participants could be from any single or multiple (i.e., "joint") U.S. Service or include other nations hosted by U.S. forces (i.e., "bilateral" or "multilateral")." The need to site new facilities and training activities in CNMI has not been well qualified or supported, and other options that should be vetted before selecting proposed actions have not been discussed.

Since DoD is proposing joint training with allies, "assured access" could come in the form of using allied nations' existing bases and training facilities for expanding their joint combined exercise activities. This lessens the need to expand combined level exercises only within the CNMI and Guam. This is especially true as the Pentagon was reported to have recently intensified discussions with Thailand and Vietnam to expand air and naval bases in those countries (Whitlock 2012); and this just after the MITT was finalized in 2010.

Additionally, the *Navy Times* reported on April 29th, 2015, that the latest Philippines-U.S. base agreement has allowed the U.S. to access eight bases for rotational deployments (Bacon 2015).

So, why limit alternatives to just the Marianas when international collaboration will be ongoing in the future. Other international bases that have more land mass and resources could prove to be a viable alternative, yet it is not explored in the DEIS at all.

It should be noted that firing ranges and amphibious exercises were discussed in the first MIRC EIS which was finalized in 1999. However, to date DoD has noted that even after all these years, "The Marianas hub has a relatively unencumbered area on U.S. territory for potential training activities" (p.1-10). Would not the real reason that the Marianas remain 'unencumbered' with live fire and other training facilities is that the islands lack large tracts of land that could be used without disturbing diverse and fragile island ecosystems? The Northern Mariana Islands are some of the youngest and most diverse coral reef systems under US jurisdiction; an invaluable resource in an increasingly threatened ocean. This indeed would make the use of other less susceptible large land masses much more practical to consider for expanding strategic military exercises, especially given the mandate of NEPA to avoid and minimize significant environmental impacts.

The size of the Mariana Islands has not changed substantially since the 1990s, nor have they expanded in available resources. Encumbering these small islands, with already mentioned "limited resources", should be the predominant reason for *not* selecting the Marianas as the location to satisfy the purpose and need of the DoD.

In short, the CJMT DEIS failed to consider any other locations for their stated purpose and need other than the Marianas. In so doing, DoD has grossly failed to meet the most basic requirements of the NEPA review process. Further, the DoD has already taken FDM for bombing practice. For DoD to ask for further islands is a heavy burden for a territory with a tiny land mass.

This is especially true given that all of the alternatives in the DEIS include nearly the same actions for all alternatives, that is constructing live fire ranges, even in the so-called, "No Action" alternative. Ultimately, it is unclear why the DoD's training deficiencies must be met in the CNMI. Training deficiencies could be met elsewhere in the Pacific where established training facilities already exist. It is also unclear whether the CNMI even offers the right landscape for filling the DoD's training deficiencies. The DEIS needs to better address why firing ranges should be built in the CNMI and not elsewhere.

Suitability of the CNMI

The 2013 *CNMI Joint Military Training Requirements and Siting Study* notes that the Impact Dudded Area is one of the training requirements carried forward. The *Training Needs Assessment* says a Dudded Impact Area needs 7.7 miles by 15.5 miles of land. Tinian as a whole is about 5 miles by 10.5 miles. Will the smaller proposed High Hazard Impact Area on Tinian fulfill training requirements? Is Tinian large enough to fill training deficiencies?

In the past, the beaches of Tinian were determined to be unsuitable for landing craft utility (LCU) and assault amphibian vehicles (AAVs). The 1999 *Record of Decision for Military Training in the Marianas* states that, "No suitable site for displacement hull LCUs and AAVs was found in the MLA on Tinian, and therefore, LCU/AAV landings will remain confined to Tinian Harbor". The CJMT proposes to radically change the reef and landscape of Unai Chulu on Tinian to make it possible for training to occur. That unique and valuable reef would have to be destroyed to make Tinian training ready. This further calls into question whether the CNMI is an appropriate location for the activities proposed in the CJMT. Perhaps DoD should focus their proposal to meet training deficiencies in a location already in existence with the type of landscape appropriate for said.

The DoD states, "While the ideal scenario would be to site both RTAs on one island, neither Tinian nor Pagan individually have the space to support both" (p. 2-24). It would appear that the CNMI does not offer the ideal training site either in size or landscape (rugged coral reefs). Perhaps training deficiencies would be better addressed on a larger land mass without reef flat.

Lack of Alternatives

40 CFR 150.214 expressly states that the EIS "should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public". In actuality, the DEIS does not provide sufficient alternatives to its proposed project.

Indeed, each of the alternatives have similar firing range footprints, combat exercises, and frequency of use. The main difference between the Tinian alternatives is whether or not the International Broadcasting Bureau is moved (effects of which are not analyzed in the DEIS) and a few changes in the size of surface danger zones. The DEIS states:

- ***Page 5-14:*** "…as described in Chapter 4. The highest level of significance for each resource was determined to be the same for all three Tinian action alternatives…"

BECQ is concerned that the various alternatives have similar levels of significance because they are in fact not alternatives.

In regards to the "no-action" alternative on Pagan, the DEIS states the following:

- ***Page 4-62:*** "Military activities would consist of periodic and low impact search and rescue training." It is unclear whether previous use of Pagan was coordinated with the Northern Islands Mayor. Use of Pagan would represent an 'action' which could interrupt eco-tourism and scientific survey visits.

- ***Page 5-14:*** "…as described in Chapter 4. The highest level of significance for each resource was determined to be the same for all three Tinian action alternatives and both Pagan action alternatives."

The DEIS needs to better assess other potential locations as alternatives for filling its training deficiencies other than just the Marianas. Currently, the DEIS only offers slightly modified versions of the same project – the construction of firing ranges on Tinian and Pagan. Alternatives could include enhanced cooperation and multilateral training in Asian countries or further use of facilities in Hawaii or Guam. As it stands, the DEIS does not satisfy 40 CFR 1502.14 (a)'s requirement to: "Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated."

Public Outreach and Agency Coordination

As noted in the DEIS, federal agencies are required to invite state and local agencies to be involved in the NEPA process. The DEIS claims a collaborative approach was implemented and that BECQ was included in collaborative stakeholder coordination (p.1-21). However, the Department of Defense's coordination with BECQ was minimal and did not give BECQ opportunities to highlight areas of concern or provide local knowledge and expertise.

In December 2013, the military's consultant AECOM met with DEQ to ask questions related to water quality. AECOM followed up with emailed questions in 2014. These discussions involved information gathering by AECOM and were not a forum for BECQ to express concerns on the CJMT. BECQ was invited to a couple large ad-hoc meetings in 2014 and 2015 where MARFORPAC presented the proposed action of the CJMT. These meetings involved multiple agencies and did not afford time to collaboratively improve the CJMT. MARFORPAC sat down with Division of Coastal Resources Management (DCRM) once, upon DCRM's request, in January 2015. One meeting a few months before the release of an EIS, which was years in the making, does not add up to cooperative consultation.

In July and August of 2013, the contractors for the DOD conducted surveys of corals, sea turtles, and marine mammals around Pagan and Tinian. Although the DOD received necessary permits for these surveys, and thus informed the CNMI government of its intent to survey these resources, no agencies were invited to participate or inform said surveys. The community was not made aware of the surveys and there was no collaboration at this important stage in the process. This lack of coordination resulted in a DEIS with severe data gaps and a faulty analysis of effects, which could have been avoided with meaningful engagement with CNMI departments and stakeholders.

In the future, BECQ would appreciate more consultation with the DOD when it is planning projects in the CNMI. BECQ has a large body of knowledge regarding the coastal resources of the CNMI and this knowledge could have helped develop a better DEIS. Cooperative consultation should occur throughout the planning process.

Additionally, at public hearings, BECQ staff observed numerous stakeholder comments expressing frustration with the DoD's outreach – or lack thereof – and the fact that this behemoth document was not published in the native languages, Carolinian and Chamorro, to enable meaningful engagement with these communities as required by NEPA. BECQ recommends the DOD make materials in Carolinian and Chamorro available to community members in order to appropriately communicate the extent and impacts of the proposed action.

Application of CNMI Law

The DEIS does not acknowledge the full extent of BECQ regulations. Appendix E, *Applicable Federal and Local Regulations* lists the CNMI's Coastal Resources Management Act (2 CMC § 1501) as applying only to the Utilities chapter. The Coastal Resources Management Act authorizes the DCRM to coordinate planning, permitting, and development of projects within the CNMI's coastal zone. DCRM's policies take into consideration a broad range of issues including land use planning, development on hazardous lands, mitigation of environmental impacts, development that would disrupt cultural practices, public access, viewsheds, and much more. DCRM's regulations should be addressed throughout Chapter 4 including the chapters addressing: Land Use, Recreation, Terrestrial Biology, Marine Biology, and Visual Resources.

In Chapter 4.7, *Land and Submerged Land Use*, the DEIS states that "[b]ecause Areas of Particular Concern are CNMI designations, not federal designations, they are considered during the coastal zone consistency determination" (p.4-162). Although DCRM appreciates the DoD's commitment to the federal consistency process, the DEIS should address APCs identified by the CNMI as part of the affected environment analysis.

Application of Federal Laws, Regulations, and Policies

While the DEIS acknowledges requirements to comply with Federal laws, regulations, and policies, it appears the letter and intent of some of these requirements were not fully incorporated into the DEIS.

Specifically, disconcerting shortcomings have been identified regarding compliance with federal laws and corresponding local enabling regulations of the Clean Water Act, Clean Air Act, Toxic Substances Control Act and Pollution Prevention Act. Compliance should also be demonstrated with CNMI laws and regulations including the Commonwealth Environmental Protection Act,

Harmful Substances Clean Up Regulations, Hazardous Waste Management Regulations and other applicable requirements.

BECQ is also concerned that the proposed actions are not fully compliant with the national policies of environmental protection and conservation reflected in the following Executive Orders (E.O.), including:

Executive Order 13089, Coral Reef Protection: This E.O. is mentioned briefly in the Marine Biology chapter (p. 4-262) and in Appendix E. However, the DEIS does not explain how the proposed actions are compliant with this E.O. which says "All Federal agencies whose actions may affect U.S. coral reef ecosystems shall (a) identify their actions that may affect U.S. coral reef ecosystems; (b) **utilize their programs and authorities to protect and enhance the conditions of such ecosystems;** and (c) to the extent permitted by law, ensure that any actions they authorize, fund, or carry out will not degrade the conditions of such ecosystems" (emphasis added). While this E.O. does allow for exemptions during times of war or "when necessary for reasons of national security, as determined by the President", there is no indication that the Commander in Chief has expressly determined that the destruction of CNMI corals is necessary for national security. The DoD currently plans to dredge 10 acres of reef to build a landing ramp for live combat scenarios and will indirectly impact many more acres through construction and operations. Especially if the DoD is to cite this E.O. it must show how it is compliant with the policies of this E.O., and BECQ requests that this information including any necessary determinations from the Commander in Chief be included in the FEIS document.

Executive Order 11988, Floodplain Management: The DEIS lists this E.O. on page 3-25 and in Appendix E. This E.O. mandates that "Before taking an action, each agency shall determine whether the proposed action will occur in a floodplain…This Determination shall be made according to a Department of Housing and Urban Development (HUD) floodplain map or a more detailed map of an area, if available. If such maps are not available, the agency shall make a determination of the location of the floodplain based on the best available information." The DEIS does note that the proposed action will affect flood zones in Tinian and be subject to flood hazards (p. 4-49). However, the DEIS does not sufficiently address how it will protect flood zones and no flood zone data is offered for Pagan anywhere in the DEIS. BECQ requests that DOD include this determination in the FEIS and provide the data upon which this determination is made. This E.O. also mandates that activities located in a floodplain must "consider alternatives to avoid adverse effects and incompatible development in the floodplains" and if no alternatives exist the agency shall, prior to taking action, (i) design or modify its action in order to minimize potential harm to or within the floodplain… and (ii) prepare and circulate a notice containing an explanation of why the action is proposed to be located in the floodplain." Given the mandates of E.O. 11988 and CNMI's treatment of coastal flood zones and wetlands as "Areas of Particular Concern" additional assessment and protection of resources in these regions should be reflected in the FEIS.

Executive Order 11990, Wetland Protection: This E.O. is briefly listed once in Chapter 3 and in Appendix E. DoD's treatment of wetlands in the DEIS does not reflect the national policy of wetland protection outlined in this E.O. or the spirit of no net loss. Executive Order 11990 directs that agencies "shall avoid undertaking … new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. … Each agency shall also provide opportunity for early public review of plans or proposals for new construction in wetlands." While the E.O. does not include "live fire training" specifically in its definition of "new construction" – which does include "draining, dredging, channelizing, filling, diking, impounding and related activities" – the spirit of wetland protection regulations aims to support the national policy of no net wetland loss or degradation, policies which are also adopted in CNMI. The FEIS should reflect all practicable efforts to avoid negative impacts to protected wetland ecosystems. Considering the High Hazard Impact Areas (HHIAs) are proposed to be located adjacent to wetlands on both Tinian and Pagan, and considering the fact that weapons firing cannot be reliably expected to be 100% contained within the designated HHIAs, action alternatives should be proposed that would more effectively minimize threats of impacts to these invaluable ecosystems.

Executive Order 13148, Leadership in Environmental Management: This E.O. is listed in Appendix E and is not mentioned anywhere in the main DEIS document. This E.O. mandates federal agencies to implement programs and policies that emphasize pollution prevention and inform the public of possible sources of pollution. DoD has agreed to be stewards of the environment in the past (DoD 2002), it is not clear how the DoD lives up to its environmental commitments with the CJMT. E.O. 13148 broadly defines facilities as "any building, installation, structure, land, and other property owned or operated by, or constructed or manufactured and leased to, the Federal Government, where the Federal Government is formally accountable for compliance under environmental regulations". As DoD's CJMT activities squarely fall within this definition, the pollution reduction and communication requirements of this Executive Order should be considered and incorporated into the FEIS.

Executive Order 12898, Environmental Justice: This E.O. is cited in Chapters 3 and 4.15 as well as Appendix E. BECQ asserts that the proposed action is not in accordance with the principles of this E.O. DoD's 1995 Environmental Justice (EJ) strategy says the DoD "will establish an accountability system for identifying and monitoring environmental justice activities" and that as part of their self-audits DOD departments will review operations, activities, and land use to determine whether disproportionately high and adverse human health and environmental effects on minority and low-income populations living near the installations have been addressed. The Strategy states that DOD will "use NEPA as the primary mechanism to implement the provisions of the Executive Order," however the DEIS fails to accurately capture environmental justice impacts to the people of the CNMI. As addressed in more detail in the body of this response, the DEIS treatment of environmental justice considerations is so

inadequate as to preclude meaningful analysis by reviewers. The actual demographics of the potentially impacted populations and possible ***human and environmental health concerns*** relating to discrete and insular minority groups are not documented; instead the DEIS primarily discusses socio-economic impacts of proposed activities and impacts to children.

Future Planning

The DEIS discusses developing a variety of plans and assessments going forward to review environmental affects if the CJMT goes forward. Will range vulnerability assessments be shared with BECQ once they are developed? Will BECQ have a chance to review other assessments and management plans related to natural and coastal resources? BECQ is the agency charged with implementing the Coastal Zone Management Act, and in the CNMI the coastal zone covers all island mass, ridge to reef, throughout the archipelago. BECQ requests that all future plans attached to the CJMT– as well as opportunities to provide comments that will be incorporated to address resource protection concerns – be published and shared with BECQ if the CJMT goes forward. Similarly, if the DoD does adopt any aspect of this proposal, consistency with BECQ regulations will be required.

As Chapter 2 of the DEIS notes in describing the proposed actions, the "EIS/OEIS analyzes 20 weeks per year of live-fire training on Tinian and 16 weeks per year of live-fire training on Pagan. In addition to the weeks of live-fire training for Tinian and for Pagan, other activities including pre-training and post-training activities (arrival and departure of trainees and equipment), non-live-fire training (e.g., logistics training), and RTA maintenance and management functions would occur outside of the livefire training durations throughout the year. … Potential future live-fire training could be accommodated up to a total of 45 weeks of training on Tinian and a total of 40 weeks of training on Pagan" (p. 2-3).The full extent of direct, indirect, and cumulative impacts of proposed training activities should be considered.

Additionally, if the DoD is in fact anticipating that future live-fire training could take place for up to a total of 45 weeks of training on Tinian and a total of 40 weeks of training on Pagan,, anticipated scenarios including timelines for this expansion and potential impacts of these expanded activities should at least be acknowledged as cumulative or indirect effects of the proposed action and assessed as such in this environmental assessment.

Approach

Pagan Residents

The DEIS repeatedly states that there are no residents on Pagan. However, this is not true. Comments concerning Pagan residents include:

- **Page 4-117:** No ... people would be affected by A-weighted and Peak noise levels [on Pagan].
- **Page 4-168:** Since 1981, Pagan has been largely closed to public access due to volcanic risk.
- **Page 4-185:** Pagan is officially uninhabited and does not contain any official recreational areas.
- **Page 4-454:** Because the island is currently undeveloped and unpopulated, there would be no impacts related to population change, public services, or community character and cohesion associated with Pagan
- **Page 4-499:** Although there is no permanent resident population on Pagan, members of the public (e.g., visitors) could be present on the island during construction.

The DEIS appears to assume that the people on Pagan are either not there or not supposed to be there. The DEIS mistakenly says that Pagan is closed off and that access to Pagan is restricted. This is not true. The people of Pagan often visit, as do other residents of the Marianas from time to time for fishing or recreating. There are typically 10 to 12 people living on Pagan at any given time. There is also a strong desire held by the people of Pagan to return home.

Homesteading policies continue to be reviewed. The people of Pagan are considered residents of the Northern Islands, and vote as residents of the Northern Islands in local and Commonwealth elections. According to Public Law 16-50, "This means that the Government has always recognized people residing in the islands north of Saipan as legal residents of those islands". The DoD's DEIS should also recognize that the people of the Northern Island's wish to return home and remove statements saying Pagan is closed to public access.

Definition of Short Term

The DEIS repeatedly states that construction impacts and training events will be "short term". Construction will occur over a period of 8-10 years which is not "short term". It is unclear how long training events will last. The DEIS makes the following statements:

- **Page 4-49:** impact is not expected to be significant because the pumping would be
- limited to periods when training exercises occur (for groundwater resources)

- **Page 4-175:** construction would be relatively short-lived, and the effects would be temporary; therefore, the indirect impact to nearby beaches or dive sites would be reduced and potentially eliminated.
- **Page 4-200:** Although construction would occur over an 8 to 10 year period, these noise impacts would be short-term and minor because only a small number of range and support facilities would be under construction at any given time.
- **Page 4-330:** Indirect impacts to historic properties and resources of cultural importance due to visual intrusions, access restrictions during construction, and noise increase during construction would be less than significant as they would be intermittent and temporary

Temporary projects can still cause great harm within a short period of time. Simply stating that an impact is temporary is not sufficient support for listing an action as having "less than significant impact". The DEIS should not rely on the "temporary" nature of the proposed action and should give more detail regarding impacts. Requests for more information are outlined throughout BECQ's comments.

Use of the Word "May"

The DEIS repeatedly uses the word "may", particularly in reference to mitigation plans. BECQ would appreciate a more definitive idea of what the DoD plans to do. In many cases mitigation would have to occur and should not be left to the possibilities of "may".

Unacknowledged Land Uses

There are multiple places throughout the EIS (4.5 Noise; 4.7 Land Use; 4.12 Visual Resources; 4.13 Transportation) that should include the impacts to the proposed multi-million dollar development by Alter City around Turtle Cove. The lease on this property was signed well before the DEIS was released (September 2014), and the proposed travel path between the Port of Tinian and the Tinian International Airport and military lease area goes directly through Alter City's leased property and proposed resort development. Therefore this proposal is not compatible with this land use. The importance of tourism and proposed resorts on Tinian should be acknowledged throughout the DEIS, and impacts to these activities should be avoided and minimized wherever possible, and mitigated where significant impacts are likely to remain.

Length of Project

The DEIS states that the construction phase of the CJMT will last 8-10 years. The DEIS does not, however, state how long the operations phase will last. The DEIS briefly notes that "assured

access would provide use of a permanent system of ranges" (p.1-10) If the CJMT plans to permanently operate on Tinian, it should make note of that. If the DOD plans to renew its lease on Tinian, it should make note of that as well. The length of time of proposed actions on Pagan, and potential direct, indirect, and cumulative impacts of these actions should be similarly detailed.

Military History and Additional References

The DEIS makes no reference to impacts at places such as Vieques or Culebra or Kaho'olawe – all of which could provide background and context for what could be expected in the CNMI.

BECQ recommends the DoD look into the following references and explain how the CJMT will avoid repeating similar experiences:

- Prouty N, Storlazzi C, McCutcheon A, Jenson J (2014) Historic impact of watershed change and sedimentation to reefs along west-central Guam. *Coral Reefs*.doi:10.1007/s00338-014-1166-x.
    - Shows reduced coral growth for two decades following military activities on Guam

- Council on Hemispheric Affairs. (2011). "Clearing Out without Cleaning Up: The U.S. and Vieques Island". Retrieved from: http://www.coha.org/clearing-out-without-cleaning-up-the-u-s-and-vieques-island/
    - "The U.S. Navy made extensive use of Vieques for weapons testing up until 2003, when it abandoned the island without cleaning up the traces of years of gunnery practice and test bombings, which were capriciously left behind. The consequences of these bombings continue to surface as cancer rates and incidents of ecological damage begin to mount."
    - "The contamination on Vieques was caused by the munitions that were dropped on the east end of the island, the unexploded ordnances that continue to leak into the environment, and the U.S. Navy's general disregard for the disposal of chemicals."

- Turalba, R. & Willmott, D. (2004). "A Toxic Legacy: The U.S. Military in the Philippines and Puerto Rico". San Francisco State University. Retrieved from http://www.feingold.org/Research/PDFstudies/Turalba2004.pdf
    - "In 1999, the EPA announced that the Navy had violated the Clean Water Act 102 times by dumping toxic waste into the waters, citing discharges of lead, cadmium, arsenic, and cyanide [in Vieques]"
    - "The 9,300 residents of Vieques have a cancer rate 27% higher than the rest of Puerto Rico, and those ill with cancer are dying at a rate 55% higher than the rest of Puerto Rico

- Hofschneider, A. (2014). "Promised Land: Will Kahoolawe Ever Be Saved?" *Honolulu Civil Beat*. Retrieved from: http://www.civilbeat.com/2014/10/promised-land-will-kahoolawe-ever-be-saved/
    - "Today, about a third of the 28,800-acre island has been stripped of topsoil, and erosion removes another 1.9 million tons of soil a year"

- "Long after the Navy left unfinished its task of removing unexploded ordnance, the state agency's trust fund for restoration work is running out of money"
- "Just setting foot on the island and listening to the wind uninterrupted by bombing is a right that some Native Hawaiian activists gave their lives for as they sought to take it back from the Navy."

Geology and Soils

Compliance with CNMI Regulations

Compliance with CNMI Earthmoving and Erosion Control Regulations are referenced as a Best Management Practice for limiting impacts to geology and soils (p. 4-6). In order to comply with CNMI regulations, BECQ encourages the DOD to apply for an Earthmoving and Erosion control permit prior to any construction activities taking place. At the very least the DoD should coordinate with BECQ to ensure all relevant requirements of the CNMI's earthmoving program are met and to appropriate mitigation is implemented.

Munitions Modeling

The DEIS currently does not describe the leaching of munitions constituents into adjacent soils. Leaching of munitions constituents can lead to contamination of soils, surrounding vegetation, and bioaccumulation in wildlife. BECQ explores the impact of munitions constituents to a greater extent in the 'Water Resources' section of these comments. However, BECQ does recommend that the CJMT plan to test for soil contamination both before (for baseline data) and regularly after operations would begin. Where leaching of hazardous substances is identified, pollutant transport models and monitoring should be used to ensure the safety of sensitive receptors including the water table and nearby human populations.

DOD does not provide information regarding the testing methods they will employ when monitoring for soil or water contamination, for modeling the chemical fate of munitions constituents (MCs), and other pollutants. BECQ would suggest, based on EPA's findings in their *Site Characterization for Munition Constituents*, that a Multi-Incremental Sample (MIS) strategy and systematic random design approach be used for soils. This approach notes that "the relative standard deviation (RSD) was much lower for MIS than for the discrete, box, or wheel sampling approaches and thus provides a much more reliable estimate of the mean concentration for the sampling unit"(EPA 2012). Also, prior to soil sampling, DOD should prevent the removal of surface vegetation, or burning, as suggested in the EIS. Removing or burning the vegetation may destroy energetic MC residues trapped in this matrix and therefore will not be captured during testing. This would result in erroneously lowered and underestimated concentrations. Therefore, BECQ suggests that soil-coring tools be used for collecting soil samples from for testing purposes. Reports of initial sample and periodic monitoring should be provided to BECQ to continue coordinated efforts to reduce threats to people and the environment.

Tinian

Impacts to Agriculture

On page 4-20 the DEIS states that "approximately 230 acres (93 hectares) of prime farmland soils would be lost to future use." This is approximately 16% of Tinian's total prime farmland soils, and the loss is considered a significant impact.

While this direct loss is accounted for in the DEIS (although a monetary value on this loss is not quantified in the main body of the DEIS), there are other indirect impacts on Tinian's agricultural sector that should be considered.

First, BECQ is concerned that the effects of munitions on agricultural land has not been sufficiently accounted for. The DEIS does note that munitions will affect the character of prime farmland soils:

- Page 4-1:Range Complex A "…a potential permanent loss of approximately 14% of Tinian's prime farmland soils due to the potential presence of unexploded ordinance and change in the character and productivity of the soil due to detonation of munitions, controlled burns for vegetation maintenance, and/or potential presence of munitions constituents."
- Page 4-15: Range Complex C "…approximately 14 acres of prime farmland solid are located which will be permanently altered due to repeated heavy use which would alter soil productivity; therefore, they would be removed from use as prime farmland soils..."

The effects of munitions on farmland soils is not sufficiently detailed in the Geology and Soils, Water Resources, or Hazardous Waste sections of the DEIS. The DEIS should quantify the amount of toxins or heavy metals that would be released into the soils and that could potentially be leached into the waters of Tinian. Permanent impacts are unacceptable and the military should ensure that farmland can be returned to its original condition when the Tinian leased lands are returned to the CNMI.

Furthermore, the loss of agricultural lands could impact the cattle ranchers of Tinian during times of drought. In years of below-average rainfall, the cattle ranchers and others who manage livestock have used the vegetation around the Lake Hagoi area as an emergency feed supply (Greene 2014). During the 1998 drought that followed a strong El Nino event, approximately 80% of Tinian's cattle died due to starvation. Members of the Tinian Cattlemen's Association suggested that the mortality rate would have been 100% had they not been able to access emergency feed/vegetation that currently sits within the proposed operation zones under Alternatives 1 and 2.

Assuming the military will make an effort to mitigate the loss of primary farmland, it is reasonable to request that this mitigation also involve a strategy or compensation measure that

accounts for occasional climate stresses on Tinian's agricultural resources (e.g. military provides livestock feed during drought). The FEIS should consider and detail any and all direct, indirect, and cumulative impacts to soils and geology on Tinian and explain how the proposed action has avoided, minimized, and will mitigate such impacts.

Pagan

Erosion Control

The DEIS notes that operations on Pagan will result in "a potential for increased erosion, compaction, and soil loss from physical disturbance caused by construction activity and changes to existing topography…" (p. 4-31), and that "[a]reas disturbed by operational activities on hillsides would erode much faster than on flat ground, as storm water runoff would have greater erosive energy as it moves downhill" (p. 4-33). Although some mitigation measures are proposed such as following best management practices, as well as following military policies and procedures for range and training area management, the CNMI should be allowed to perform periodic inspections to ensure best management practices and policies and procedures are actually being followed. As monitoring of the new intensive use will be costly, mitigation and monitoring proposals should include funding to enable CNMI agencies to periodically inspect areas of concern to ensure compliance with applicable laws and implementation of efforts to avoid, minimize, and mitigate impacts.

Seismic Activity & Volcanology

The DEIS correctly notes that most seismic activity in the Marianas occurs at extreme depths, tens to hundreds of miles below the earth's surface, and that eruptions are caused by changes in magma density at great depths, so that "surface level **construction activities** would not interfere with these geological processes and would not increase the risk of seismic activity" (p.4-30, emphasis added).

The DEIS only addresses impacts to geologic hazards due to *construction* activities, but does not explicitly address seismic and volcanic hazards with respect to *operations*, which includes explosions capable of triggering localized landslides and 6 ft. (2 meter) deep impact craters; activities that may cause significant impacts to the environment which were not sufficiently addressed.

This being said, Mt. Pagan is an active stratovolcano, and regularly – annually, and some years more frequently – releases ash and gas plumes from minor eruptions. The 2006 USGS report on Mt. Pagan regards the volcano as "potentially dangerous", noting localized erosion due to minor eruptions, and an estimated VEI 5 eruption (equivalent to Mt. St. Helens) when the caldera first formed. While it is not likely that surface construction or operations would trigger deep seismic activity or the release of magma, the U.S. Military has a record of utilizing explosive force to

alter the dynamics of volcanoes and near surface structure (see bombing of Mauna Loa, Hawaii – Lockwood & Torgerson 1980).

Shallow seismic activity and alteration of near-surface structure could have uncertain consequences on Mt. Pagan's volcanology. While it is not likely that operations would trigger a full scale eruption (though this has been suggested in the past (Seielstad 1944)), it would be wise to take a detailed look at the impact that explosive forces could have on Mt. Pagan's near-surface stability and *structure* (beyond localized landslides).

Recommendations

- The DEIS should show Significant Impacts to Topography, Geology, and Soils from Construction and Operations on Tinian and Pagan.

- Return Prime Farmland to Original Condition: The proposed activities will have a significant impact on a large portion of the prime farmland on Tinian, potentially removing them from productive use permanently. The military should ensure that the farmland will be returned to its original condition when the land is returned to the CNMI.

- The DoD should consider providing assistance to Cattlemen during droughts.

- Comply with CNMI Earthmoving and Erosion Control Regulations including development of a Stormwater Pollution and Prevention Plan. It is important that the DoD meet all relevant and applicable requirements of the earthmoving program.

- Erosion Control Plan must account for leaching from munitions including baseline data of current soil health. Additional funding to agencies should be provided to ensure best management practices as well as agreed upon avoidance, minimization, and mitigation actions are implemented.

- Erosion Control Plan for Pagan: Allow CNMI DEQ to perform periodic (annual or semi-annual) inspections of erosion control measures on training trails. Arrange for and pay for transportation to Pagan to perform the inspections.

Water Resources

Legal Mandates

BECQ is concerned that the proposed CJMT is not in compliance with the Federal Clean Water Act or with local water quality standards. Chapter 4.3 *Water Quality* mentions the Clean Water Act (CWA) exactly once, and then only in reference to the CJMT's Stormwater Management Plan. The CWA contains many more provisions in addition to stormwater management and the CJMT must show its compliance with the CWA. Chapter 4.3 does not mention local water quality standards at all. The CJMT must show its compliance with the water quality standards of the CNMI (NMIAC 65-130), as well as demonstrate how these standards will not be negatively impacted due to proposed activities. BECQ requests that DOD provide any and all studies, data, and reports used to make these determinations for the FEIS. Further, proposed activities should also allow for coordination to enable continued periodic monitoring and inspections by BECQ, and reports generated by DOD that relate to current conditions and possible future impacts from proposed activities such as sediment and contaminant loading should be shared with relevant agencies. BECQ hopes DOD will expand efforts to coordinate with local agencies as NEPA requires in order to address significant concerns regarding both water quality and wetlands in the CNMI. It is important that local standards be considered and applied to the maximum degree possible. When local regulations are more stringent than federal laws the spirit of these regulations should be considered and addressed in the environmental impact assessment and efforts to comply with these regulations should be reflected in the FEIS and subsequent record of decision.

Water Quality Monitoring

BECQ Water Quality Surveillance/Non-point Source (WQS/NPS) Branch was created in early 2014 to gather data and assess CNMI water bodies in keeping with the US Clean Water Act requirements. The WQS/NPS Branch works with funding from US EPA to monitor CNMI water bodies, including those surrounding and on federally leased lands.

The WQS/NPS Program plan includes GPS mapping of stream systems, conducting sanitary surveys of the watershed, testing water quality for chemical, bacteriological, and physical parameters, and testing stream sediments for volatile petroleum, (Benzene, Toluene, Ethyl-benzene, Xylene, and Gasoline) diesel, and residual organics, pesticides, PCBs, and metals. This data along with other research studies are used to assess whether or not the water bodies contained therein are attaining their Designated Use categories (as defined by EPA regulations

and NMIAC 65-130). Those waterbodies that are not meeting specific designated uses are then further evaluated to locate the source of impairment and remediate the stream system.

It should be made clear that the CNMI Water Quality Standards (WQS) defines a "Water body" as any "Commonwealth or State surface water and any water course/conveyance including modified stream courses and or any storm water drainage system whether *perennially wet or intermittently wet and dry*." Therefore, munitions constituents that land, dissolve into the subsurface, or surface water, or partition into, or sorb onto the soil, substrata, or biota of a stream bed, wetland, or nearshore are in fact polluting a water body of the CNMI. The degree of the significance is dependent upon the levels of MCs and their by-products encountered therein and their bioavailability.

The WQS/NPS Branch contains invaluable knowledge of CNMI's waters and their health. DOD consultants contacted BECQ once in December 2013 with a few emails to follow-up. These brief interactions were not enough to ensure an informed and accurate EIS; as it currently stands the DEIS is not using the best information available.

WQS/NPS is mandated to gather data and assess CNMI water bodies. The closure of the MLA for at least 20 weeks a year (and possibly as frequent as 40 weeks per year) could hinder WQS/NPS's ability to do its job. Without greatly improved coordination with DOD, BECQ's WQS/NPS staff would be unable to collect marine and fresh water quality samples as required by the US EPA Environmental Assessment and Coastal Health (BEACH) grant in keeping with the CWA requirements. Currently, WQS/NPS tests Tinian's nearshore marine waters every week over an eight (8) week period, followed by sampling once a month for two months, and then the rotation cycle repeats. This cycle will be inadequate in frequency to protect human health as the population of Tinian grows (or doubles with military trainings). Samples will have to be collected more frequently to be protective of the projected larger population that will be using these waters in training and for recreation. Monitoring requires regular access to sites by WQS/NPS – BECQ staff who must have ready access to all surface and marine water sites 30 weeks of every year. The data collected are then used to make designated use assessments of CNMI water bodies every two years as part of the CNMI 305(b) and 303(d) Water Quality Assessment Integrated Report as required by US EPA. Should the DOD move forward with proposed actions in the CJMT, BECQ requests significantly enhanced coordination to ensure monitoring activities can proceed unhindered on Tinian. Given the extent of the proposed use and potential impacts to surface, ground, and marine water quality on Pagan, additional coordination including the provision of funds to support periodic monitoring may be an appropriate element of monitoring and mitigation measures.

BECQ is also concerned about CJMT's proposed timeline for monitoring environmental conditions on the proposed ranges. The DEIS states:

- ***Page 4-39:*** "The Range Environmental Vulnerability Assessment would be implemented on all live-fire operational ranges after they have been in use for a minimum of 1 year to provide a snapshot of the current environmental conditions of operational ranges as well as a detailed assessment of potential munitions constituent migration from operational ranges to off-range areas."
- ***Page 4-39:*** "The results of the Range Environmental Vulnerability Assessments would determine if additional actions are necessary. These additional actions may include environmental sampling, characterization of physical properties, implementing best management practices, and/or conducting a risk assessment."

The CJMT's proposed frequency for monitoring water quality parameters is inadequate for early detection of contamination from munitions constituents (MC), and is thus insufficient to reliably stop further contamination before levels pose health risks for grazing animals, birds, fish, and/or humans. Further, the use of the word 'may' indicates that environmental sampling is not a definite part of the Range Environmental Vulnerability Assessment. The DEIS lacks any description about how the range conceptual site model will be developed for determining current environmental conditions (geological, hydrological, geographic and character data) and tracing potential migration of MC within the soil, subsurface and surface waters. The DEIS mentions elsewhere that the CJMT will cap existing wells in the MLA, it would be wise to allow some wells to be used for monitoring for munitions constituents (MC) and other pollutants instead.

Classification of CNMI Waters and CNMI Law

BECQ classifies CNMI waters in order to communicate the health of CNMI's waterbodies and plan for their protection. According to NMIAC 65-130-101, Class AA of marine waters should "remain in their natural *pristine* state as nearly as possible with an *absolute minimum of pollution or alteration of water quality* from any human-related source or actions." The CNMI classification system also includes classes for fresh surface waters, and provisions for the protection of wetlands and groundwater. Both Tinian and Pagan are surrounded by Class AA designated waters, the proposed CJMT is incompatible with the islands' Class AA designation.

NMIAC 65-130-010 also includes an Anti-degradation policy that expressly mandates that the CNMI protect, maintain, conserve and improve the quality of its waters for the growth and propagation of aquatic life, coral reefs and wilderness areas, and for domestic, agricultural, recreational and other uses. This policy also states that, "In no case shall any action be allowed which would lower water quality below that necessary to maintain and protect designated and existing uses", and, "where existing water quality criteria for designated uses, action that would further lower water quality are prohibited."Therefore, any alteration of these Class AA qualities

or designated uses by the introduction of live fire ranges, amphibious vehicular exercises, and other proposed military exercises/activities, as a result, are prohibited.

It is important to note that the amendments to the CNMI WQS in 2014 further added the use of numeric biological indices as an additional method to determine the level of use support for aquatic habitats and propagation in CNMI water classifications, i.e., Class AA and A for marine, and Class 1 for CNMI fresh waters. These indices are used in addition to traditional bacteriological, chemical (including toxics) and physical water quality parameters to determine if CNMI waters are meeting all their use designations as part of the US CWA and for monitoring other applicable use permits.

NPS/WQS is also responsible for assessing CNMI Waters' Designated Uses and whether the criteria for these uses have been attained. Designated Uses are defined by US EPA, for which the CNMI has developed assessment criteria to measure attainment, impairment, or improvement of said uses. The Designated Uses and the CNMI criteria for determining attainment of each are listed in TABLE 1 below. Fresh waters have the additional use designation of providing for a Potable Water Supply, which is discussed in the Ground Water section to follow.

TABLE 1 Assessment Criteria for Coastal Waters

Designated Use	Criteria for Attainment
Aquatic life	• Habitat suitability: biocriteria (ALUS) score of "fair" or "good" for all sites within segment and other study results • Dissolved oxygen: less than 10% of samples exceeding criteria for all sites within segment • Nutrients (Nitrate and/or Orthophosphate): less than 10% of samples exceeding criteria for all sites within segment. • Ambient water quality criteria met (where data is available) • General provisions met: floating/settleable solids, pH, radioactive substances
Fish consumption	• Fish tissue data shows fish collected within segment to be free of contaminant concentrations exceeding USEPA standards, or very low likelihood of fish tissue contamination due to current or historic land use patterns in adjacent watersheds.
Recreation	• Enterococci bacteria: less than 10% of sample events resulting in beach advisory for all sites w/in segment • General provisions met: floating/settleable solids, pH, radioactive substances
Aesthetic Enjoyment/Other	• Empirical evidence • Student findings, published research, studies, editorials, etc.

Source: Bearden et al, 2014

In addition to assessing Designated Uses, the NPS/WQS branch assesses CNMI waters for the Consolidated Assessment and Listing Methodology (CALM), created by US EPA to meet the US CWA mandates. This assessment is conducted every two years as part of the US EPA required, 305(b) and 303(d) Integrated Report from all US jurisdictions. This rigorous review includes the most recent scientific data, studies, and anecdotal evidence by professionals and other stakeholders to determine the overall attainment of the waters Designated Uses.

The Report's results are used by CNMI resource managers to create management plans to remediate impaired waters so they may comply with local anti-degradation policies and meet the US CWA mandates. Understanding BECQ's obligations to EPA are necessary for understanding how the CJMT will affect the waters of the CNMI and why the current DEIS is incorrect in its current assessment of CNMI waters.

TABLE 2 EPA Consolidated Assessment and Listing Methodology (CALM) Reporting Categories

EPA CALM CATEGORY:	DESCRIPTION
1	All designated uses are supported, no use is threatened
2	Available data and/or information indicate that some, but not all of the designated uses are supported
3	There is insufficient available data and/or information to make a use support determination
4a	A TMDL to address a specific segment/pollutant combination has been approved or established by EPA
4b	A use impairment caused by a pollutant is being addressed by the state through other pollution control requirements
4c	A use is impaired, but the impairment is not caused by a pollutant
5	Available data and/or information indicate that at least one designated use is not being supported or is threatened, and a TMDL is needed (a use is threatened if a waterbody is currently attaining WQS, but is expected to not meet WQS by the next listing cycle)

Source: Bearden et al, 2014

Tinian

The DEIS notes in Chapter 3 that several of Tinian's waters are impaired by enterococci bacteria and in Chapter 5 the DEIS states that "periodic water quality assessments between 2004 and 2012 have indicated that nearshore waters are impaired at Unai Chulu, which does not support its

designated Class AA classification due to exceedances in enterococci bacteria from an unknown source." (p.5-21) It is BECQ's position that, first, impairment of waters is *not* a reason to further degrade those waters with development activities, and, second, that, although is the only indicator currently in use, enterococci alone is not a very good indicator for classifying tropical waters as contaminated.

Using the stated criteria, the 2014 CNMI 305(b) and 303(d) Integrated Report evaluated data collected from the most recent five (5) years. Tinian waters within the Masalok, Puntan Daiplola Manibot, and Puntan Tahgong Watersheds, areas where the DEIS proposes activities, received a CALM category of 5. This means that the impairment or threat due to a pollutant, which in this instance is bacteriological exceedances for the fecal indicator Enterococci. However, this determination is misleading in that Enterococci is known to be a less than ideal indicator for tropical waters. Enterococci has been shown to exist naturally in tropical near shore sediments and may be re-suspended due to wave action causing false exceedances, or "red flags"/public recreational advisories. (Rochelle-Newall et al 2015, Nshimyimana et al 2014, Fujioka et al 1996, Kromoredjo and Fujioka 1991). However, lacking another US EPA approved indicator/method to determine whether fecal contamination may have actually occurred, in these very remote beaches, has not been possible. Therefore, BECQ is resigned to "red flag" beaches even though they may actually pose no threat from fecal contamination. BECQ and other tropical jurisdictions continue to wrestle with this shortcoming, though all are striving to establish more definitive and reliable public health testing regimes and thresholds for public advisories.

Given this obvious limitation in accurately determining the type of bacteria present in near shore waters, fecal or natural, the CNMI has no other recourse at this time then to state that the Recreation Use Designation is not being supported, even when it is unlikely to be caused by actual fecal contamination. Therefore Tinian's near shore waters within these watersheds received a CALM category of 5, even though it is unlikely that these remote beaches miles north from the majority of Tinian's estimated 2,000 inhabitants (2010, CNMI Census data), and any industry or anthropogenic activity, will remain "impaired" until such time that another more reliable tropical fecal bacteria indicator is proven and approved by US EPA. Work is presently underway to use the Quantitative Polymerase Chain Reaction (qPCR) test or other method that is capable of discerning between naturally occurring fecal indicator bacteria and actual fecal contamination.

In contrast, Tinian's near shore waters meet most other designated uses. These Class AA waters fully support Aesthetic Enjoyment and received a "Fair" to "Good" ranking for Aquatic Life and Propagation using the biological indices employed by the BECQ Marine Monitoring Team. Indeed, these waters would be reported as fully supporting their Aquatic Life and Propagation use designation if only results from the last two years of reliable data were used. However, the previous CNMI 305(b) and 303 (d) Integrated Reports relied on erroneous nutrient and dissolved oxygen (DO) data, which prevented these waters from being upgraded in quality. This is true

even though it was found that this older data was incorrect as nutrient levels were falsely elevated due to the use of a testing method which is susceptible to salt inference, and DO levels were decreased due to sampler error.

BECQ's laboratory is now using a new Flow Injection Analyzer (FIA) method which is not affected by salts and through quality assurance testing shows nutrient levels are well within accepted WQS, as are DO levels, now that trained samplers from WQS/NPS branch have taken over collection and analysis in the field.

DO levels continuously test well within accepted WQS concentrations. Therefore, Tinian's water use designations are expected to receive a CALM category of 2 in the next reporting cycle using newer more reliable data. BECQ is concerned that this improvement will only be possible if the proposed training exercises are not allowed in these fragile near shore environments. Given the extent of likely impacts, without significantly increased avoidance and minimization, these activities, if allowed, would preclude these waters from ever meeting their intended Designated Uses again. If DOD were to proceed with these activities it is essential that collection of baseline data and ongoing monitoring and mitigation efforts are coordinated with BECQ in order to reduce the potential impacts of these activities to the greatest extent possible.

Pagan

Using the stated criteria, in TABLES 1 and 2 above, the 2014 CNMI 305(b) and 303(d) Integrated Report determined that all of Pagan's waters have attained a pristine CALM category of 1, "All Designated Uses are supported and no use is threatened."Additionally, all waters on and surrounding Pagan are Class AA, and Tier 2 in the CNMI 2008 BEACHGrant application. Any alteration of these high quality waters would require an Anti-degradation Review, including at a minimum, a Section 401 Water Quality Certification.

The DEIS states that the CJMT could negatively affect the waters of Pagan. For example, "Construction activities could result in the accidental release of pollutants" (p.4-57). It is paramount that Pagan be protected from any anthropogenic stressors or impacts having attained a CALM Category of 1. Pagan, Agrihan, and Alamagan are the only *inhabited* islands that have attained this highest level of use designations due to their remoteness and lack of any consistent anthropogenic stressors or pollutants. Therefore, any future development or activities - construction, live firing ranges, amphibious landings, exercises, or otherwise - that would alter the natural state of these waters would be considered a significant impact, and one not easily remediated.

Criteria for making impact determinations

It is unclear from the DEIS what the thresholds were used for making impact determinations. The DEIS should identify thresholds and criteria for determining impacts from construction and operations. Statements such as "Resource management measures for storm water management would be utilized to minimize impacts to surface waters resulting from operation activities. There would be less than significant impacts related to groundwater and to nearshore waters." (p. 5-24) are insufficient. In this case, more information is needed on how management measures will prevent accumulation of shell casing, MCs and their byproducts from leaching into subsurface and surface waters, soil, and biota given the lack of a chemical fate model.

Lack of Baseline Data

BECQ is concerned that there is limited baseline information for surface and groundwater resources, especially in regards to MCs and their byproducts. It should be noted that upon request DOD was expediently provided with all existing DEQ marine water quality data in December 2013. DOD was told at that time that BECQ had limited ground water and surface water data from the Northern Islands due to lack of funding and staff. Given that the military had plenty of time to collect samples to fill in data gaps, it is unclear why baseline levels were not established or not shared in the DEIS. These water quality values are needed by all parties to grasp the current state of these CNMI waters and to provide a clear understanding of the impacts the proposed activities would have on their quality should activities be allowed. DOD with BECQ oversight must establish ambient environmental conditions prior to construction and use of any live firing ranges.

The DEIS acknowledges, briefly, that "Risk of contamination to groundwater from munitions constituent … is possible" (p. 4-60 – 4-61). Although groundwater on Tinian is well documented, there is little published on groundwater quality for Pagan.

In regards to water quality monitoring on Pagan, the DEIS states the following:

- ***Page 5-24:***"impacts to surface waters from leachable compounds from munitions constituents would be less than significant with implementation of resource management measures, including the Range Environmental Vulnerability Assessment program."

There is no base line data with which to compare, or for CJMT to identify increasing contamination levels, and ultimately to react and remediate. The present testing regime is only completed every five years which is too infrequent to prevent heavy metal and MC contamination from entering CNMI waters and accumulating. This places CNMI surface,

subsurface and near shore waters and the surrounding ecosystems at risk of bioaccumulation and potentially significant hazardous effects.

- ***Page 3-15:***"A well-defined valley system exists but there are no streams associated with these valleys." This has not been validated by any study. Most streams within the Northern Mariana Archipelago are seasonal, intermittent, or ephemeral (when rain events occur). Just recently the WQS/NPS branch has begun sampling several stream systems on Saipan. This requires staff to take "grab" samples as rain and stream flow allows. It is most likely the same for the stream systems on Pagan.

In December 2013, when DOD representative, Martha R. Spengler, (Cardno TECH) was presented with existing water quality data for the rest of the islands, she was informed that there was a lack of information for any of the Northern Islands. She was asked at that time to consider combining efforts and resources to collect baseline levels for all surface water parameters on Pagan, being valuable information for both DOD and the CNMI. No further contact was made on the part of Spengler or DOD to bring this valuable information to fruition, reflecting at the very least poor planning on the part of those responsible for compiling and substantiating claims in the current DEIS.

Before DOD commences any proposed alteration of Pagan's present conditions, BECQ WQS/NPS welcomes the opportunity to conduct similar studies on Pagan, given the necessary resources needed to complete the studies by working in conjunction with DOD and other federal agencies that may have the funding to support their interest in determining the present (pre-activity) condition of Pagan's surface waters. Until such time DOD lacks the necessary preliminary data to present a clear picture of potential impacts and their severity. Such assessments should be conducted and reports provided to local resource agencies in order to properly understand the potential impact of the proposed action on these resources. The lack of data does not give license to assume conditions such as ephemeral streams, which are present on islands with similar (if not less extreme) topography in the CNMI, are not present on Pagan. BECQ urges first that robust data reflecting actual conditions be gathered; that failing, assumptions based on local conditions and the precautionary principal should apply.

Munitions Constituents and Water Contamination

The DEIS does not sufficiently address the impact of MCs to surface, ground, or nearshore water resources. The DEIS is overly dependent on stormwater erosion controls and its Range Environmental Vulnerability Assessment. This Assessment will not be performed for the first year of operations which could lead to environmental damage within that time. The Assessment lacks baseline data on which to compare future performance. Finally, the Assessment would only look at "high explosives (e.g., trinitrotoluene, royal demolition explosive, high melting explosive from munitions items containing high explosives), perchlorate (from propellant in rocket fuels),

and lead (from small arms)" (p.4-39). As noted below, munitions can leach heavy metals and other contaminants which should be tracked.

The DEIS does not describe any sort of management measures (remediation after contamination is detected) nor does it discuss cleanup of the live firing ranges at any time, even though Tinian's military area is on leased land that reverts back to the CNMI. Any contamination is DOD's responsibility. Contamination should be cleaned up before lasting damage is caused and before land is returned to the CNMI.

Munitions Modeling

The DEIS does not state whether or not they currently possess baseline water quality data for Munitions Constituents (MCs), to compare to future levels, nor do they specify what MCs would be included in live and inert munitions. The DEIS does not provide information regarding the model or method used to determine the chemical transport of MCs throughout the waterbodies of the CNMI.

Given that a list of MCs that may be used during training exercises was not provided in the DEIS, BECQ relied on the 2012 US EPA Federal Facilities Forum Issue Paper: "Site Characterization for Munitions Constituents", henceforth referred to as "Issue Paper", to identify the types of potential contaminants that may be expected from such activities. This was used to evaluate whether or not significant impacts would be expected. DOD provides insufficient models to describe how the proposed management measures would prevent significant impacts to Water Resources as purported in the DEIS.

The Issue Paper covers both energetic and non-energetic munitions constituents. The EPA states in their Issue Paper that the most energetic chemicals used by DOD, "fall into one of three groups – nitroaromatics, ni-tramines or nitrate esters (Fig. 2). Among the nitroaromatics, TNT (2,4,6-trinitrotoluene) is widely used as an explosive, and DNT (2,4-dinitrotoluene) as a component of many single-base propellants. RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine) and HMX (octahydro-1,3,5,7-tetranitro- 1,3,5,7-tetreazocine) are nitramines used in various explosives, and NG (nitroglycerin) and NC (nitrocellulose) are nitrate esters used in gun and some rocket propellants." There are also chemical "stabilizers" used in propellants including, "DPA (diphenylamine), ethyl centralite (diethyl diphenyl urea), and akardites (methyl diphenyl urea)." The Issue Paper goes on to list, "A variety of alkali metal salts are also added to some propellants to help reduce secondary flash and smoke. Other non-energetic binders and plasticizers are included in some propellant compositions to make the grains less brittle and examples include the two esters of 1,2-benzenedicarboxylic (or phthalic) acids—dibutyl phthalate and diethyl phthalate." Other significant compounds in propellants may include oxidizers such as ammonium and potassium perchlorate.

Although these chemicals are known to be associated with MCs, the DEIS fails to discuss the chemical transport or fate of these compounds as a whole and only discusses the fate of inorganic heavy metals. Thus, the DEIS, conveniently excludes any informative discussion of the solubility or transport and fate of any other MC compounds in CNMI waters or soils.

The Issue Paper goes on to state, "The solubility of these compounds in water varies tremendously, from a low of about 4.5 mg/L for HMX to about 4400 mg/L for Nitroguanidine (NQ). Because these compounds usually are deposited as small particles of the energetic compound, the solubility and the rate of dissolution are important in determining the initial fate of the compounds in the environment. At some arid sites, chunks of energetic compounds persist on the soil surface for many decades." Although, Tinian soils would not be characterized as arid, one must consider the subsurface transport of these soluble compounds in through Tinian's porous karst soil. Their partitioning out of the water column into soil, sediment and biota; and their uptake by plants is largely dependent upon their octanol/water coefficient (Kow). Compounds with Low Kows will not sorb strongly to soil surfaces and therefore are more mobile in the environment. These include NQ, HMX, and RDX. One must look further at the impacts to water quality and organisms living therein, their uptake, and their contribution to the food web. Other compounds like TNT, or PentaerythritolTetranitrate (PETN) with high Kows will remain sorbed to soils, sediment and biota. Therefore, substrate sampling will be required to determine MC post activity levels and their uptake and eventual environmental fate

According to the EPA Issue Paper, the metals one would encounter in MCs are Copper (Cu), Lead (Pb), Antimony (SB), Tungsten (W), and Zinc (Zn).

The Non-Energetic contaminants include Methyl tert-butyl ether (MTBE), Ethylene dibromide (EDB), dioxin, furans, polychlorinated biphenyls (PCBs), polychlorinated naphthalenes (PCNs), herbicides, pesticides, dyes, metals, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOC). Of these the Issue Paper states that the following MCs can be found in ground water at the Massachusetts Military Reservation (MMR): metals (Cu, Pb, Sb, W, Zn), dioxins, furans, RDX, HMX, ADNT, DNTs, TNT, and Perchlorate. Soils at the MMR are contaminated with: Metals (Cu, Pb, Sb, W, Zn), dioxin, furan, PCN, DNTs, phthalates, N-nitrosodiphenylamine, RDX, HMX, TNT, NG, and percholate.

On top of assessing energetic and non-energetic MCs, modeling must also state the screening values used. The DEIS cites a US Marine Corps report which studied "sediments and water quality for 26 different constituents related to munitions at several" training ranges and found no munition constituents detectable (p.4-61). The cited paper lists health-based environmental screening levels for a few chemical agents, however it is unclear what screening levels were used for the 26 different constituents. The DEIS states that this paper included an assessment of lead and magnesium, neither the word "lead" nor the word "magnesium" appear in the cited paper. BECQ is unsure if this is the paper the DEIS meant to cite given that it does not contain the information to which it is cited. Without stating a detectable limit, one cannot determine whether

or not the screening level was protective of wildlife or human health, as the detectable limit may have been set above protective levels.

Likelihood of Leaching and Dispersal

There exists a genuine and proven threat of MCs partitioning into water courses and leaching contaminants to the near shore waters therein, as supported by several studies (Block, 2003; Siegel, 2002; Pichtel, 2012, US EPA Issue Paper, 2012). The EPA Issue Paper, discussed above, also addresses the likelihood of various ordnance depositing residue into the environment.

The EPA Issue Paper states, that "[f]or small arms, M.R. Walsh et al. (2007a) estimated that 99% of the residue is deposited within 5 m of the firing line for pistols, 10 m for rifles and small machine guns, and 20 m for 50-caliber machine guns. Deposition extends out to 50 m behind where shoulder-launched rockets are fired (M.R. Walsh et al. 2009, Ch. 3 in Jenkins et al. 2007), and 10 to 20 m in front. By far the greatest residue deposition is to the rear at these firing positions for antitank rockets. Downrange deposition is somewhat greater for 105-mm artillery and tanks than for 155-mm artillery." Additionally, the residue left from low-order detonations "are the major source of residues at impact areas," (EPA Issue Paper and Table 10, reproduced below). "Low-order" detonations are partial detonations.

Table 10. Mass of explosives residue deposited from low-order detonation tests (from Pennington et al. 2006, Table 9-1)

Ordnance	Explosive Fill	Mass of explosive in round (g)	Percent deposited
Mortars			
60mm	Composition B	191	35
81mm	Composition B	726	42
120mm	Composition B	2989	49
Howitzer			
105mm projectile	Composition B	2304	27
155mm projectile	TNT	6985	29

Even at great expense, planning, and employing management measures could not prevent MC contamination of adjacent surface and wetland areas indefinitely, especially given Tinian's karst soil and the contamination documented at many other firing ranges. Stating that these impacts would be "less than significant" is therefore, indefensible.

Range Complex A and the High Hazard Impact Area sited in Alternatives 1, 2 and 3, for Tinian poses significant long term threats to the terrestrial habitats, especially wetland and surface water areas of particular concern (APC) that lie adjacent to the high hazard impact areas. The EPA Issue Paper studied the concentration of nitroglycerine in surface soils at a number of small arms ranges. Their findings are reproduced in Table 15 below and demonstrates the great distance these contaminants can be dispersed.

Table 15. Concentration of nitroglycerin in surface soils for various distances downrange at small arms ranges in the United States and Canada.

Location/Range	Type of Use	Samples analyzed	NG Concentration (mg/kg) at Downrange Distance (m)						
			0–5m	5–10	10–15	15–20	20–25	25–30	30–35
Yakima Training Center, WA [1]	Mixed	1	85						
Ft. Lewis, WA[1]	Mixed MG*	5	8.6	2.1	1.2				
	M-16	10	413	252					
CFB/ASU Wainwright, AB [2]	M-9 pistol	3	21						
	M-16	3	13						
CFB-Petawawa, Ontario [2]	M-16	8	15						
29 Palms, CA[2]	MG	3	93	89	15	6.8	2.5		
	M-9 pistol	4	110						
	M-16	10	25	2.9	4.6				
Ft. Richardson, AK [2]	Mixed MG	10	357	336	9.4	4.6	13		
	Mixed Sports	10	113	199	9.1	6.9	12	15	24
Camp Edwards, MA [3]									
Juliet Range	M-9 pistol & M-16	2	3						
Echo Range		2	0.4						
Kilo Range		2	56						

* MG – machine gun
[1] Jenkins et al. 2007; [2] Jenkins et al. 2008; [3] Clausen et al. 2010b

The CNMI BECQ is charged with following its promulgated anti-degradation policy within the WQS and is mandated to keep these waters in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. Therefore the high impact area and live firing ranges proposed would result in an unacceptable significant impact to Tinian and Pagan's surface waters and wetlands, which are now free of MCs, (as far as we know given no baseline data is provided within the DEIS).

The EPA Issue Paper, goes on to stress that the most significant transport of small particles of these energetic compounds is through their dissolution by "precipitation and downward transport into soil." The Issue Paper cites several studies including Clausen et al. 2004, Jenkins et al. 2001, Martel et al. 2009b, and Chapter 3 in Pennington et al. (2006), to show that "Once dissolved,

Royal Demolition Explosive (RDX) and HMX in particular can migrate through the vadose zone and contaminate underlying groundwater aquifers, especially on training ranges that have permeable soils, a shallow groundwater table and abundant rainfall". These soil conditions are present on Tinian, and thus assessment of environmental impacts should include consideration of risks and proposed monitoring and mitigation measures to address threats of leaching and discharge of hazardous compounds associated with the proposed actions.

Bioaccumulation

Another concern related to MC is the possibility of bioaccumulation. As MCs leach into the CNMI's soils and waters, they can be taken up by plants which in turn may be eaten by cattle and wildlife. The DEIS notes that MCs are not expected to substantially impact nearshore waters as the corrosion around the metal would remove the metal from direct exposure to the corrosiveness of seawater. However, this does not mean that the metals in benthic habitats would not be completely without hazardous consequences. The DEIS states that MCs in the water column may partition out of the water column into sediment or biota and "be restricted to a small zone around the metal" to "become covered by marine life" (p.4-61). These heavy metals could then become bioavailable for uptake by grazing marine animals. This in turn creates a hazardous source of heavy metal contamination for wildlife and if eaten, by humans. It is curious that the DEIS does not discuss this potential given that local residents rely heavily on fish, other marine animals, and cattle, as a major component of their regular diet. It is also unclear why this is glossed over given that DOD suggests that a proposed slaughter house, if constructed, would provide meat to military personnel as well. Direct, indirect, and cumulative impacts to the environment and human health due to bioaccumulation should be assessed and to the greatest extent possible avoided, minimized, and mitigated.

A recent study by the University of Guam's Water and Environmental Research Institute, tested sediment off Saipan's west coast in 2008 and 2009. Dr. Denton found mercury "spikes" accompanied by increased Copper (Cu), Iron (Fe), Manganese (Mn) and Zn enrichment, "which suggest they were remnant artifacts of the US invasion of Saipan in 1944. Mercury fulminate, for example, was the primary explosive used in primers and detonators of artillery shells and percussion caps of bullets during WWII (US Navy, 1947)." We can only expect similar long lasting contamination associated with present proposed live firing ranges on Tinian and Pagan.

The CNMI WQS stipulate that all waters (including water courses be they wet or dry) shall be free from toxic pollutants in concentrations that are lethal to, ***or produce detrimental physiological response*** in human, plant, ***or animal life***. Detrimental responses include ***significant alterations in water biota***. BECQ requests that the FEIS address these concerns and detail how potential impacts will be avoided, minimized, and mitigated.

Impacts to Groundwater

BECQ disagrees that the proposed activities will result in "Less Than Significant Impacts" to groundwater resources. The DEIS does not support its claim for "Less Than Significant Impacts". Further, BECQ asserts that the CNMI owns the groundwater of Tinian and if the DoD would like to use it they must apply for a permit and use it in accordance with CNMI law. BECQ further asserts that the groundwaters of Tinian meet the definition of and could potentially be designated as a sole source aquifer by the EPA.

There is only one section in the DEIS that provides details for there being a less than significant impact to ground water by chemical transport of MCs. The DEIS states:

> **"**Groundwater resources located along the northern and eastern portions of the High Hazard Impact Area would have the greatest potential to be affected. Those are the areas where the surface soils are moderately permeable, shallow rocky clays, and/or moderately deep to deep clay…. However, the risk of munitions constituent contamination to groundwater is expected to be less than significant because of: (1) limited existence of basal groundwater in the High Hazard Impact Area, (2) relatively deep soil formation in the gentler sloping areas, (3) the depth to groundwater (i.e., greater than 200 feet [60 meters]), and (4) proper range management and the implementation of the Range Environmental Vulnerability Assessment program. Based upon the above analysis and the implementation of resource management measures in Section4.3.2, Tinian Alternative 1 operations would result in less than significant impacts to groundwater resources" (p.4-50).

This assessment cannot be substantiated as DOD does not provide base line values with which to compare after firing ranges activities begin. DOD does not propose to test for the chemical fate of MCs (heavy metals, TNT, or other explosive chemicals) until after one year. Therefore, they have no way to test the significance of the contamination in soil and ground water thereafter. Tinian is also a sole-source aquifer system with limited fresh water availability, and DoD has provided no evidence that impacts such as contamination, salt water-intrusion, or water shortage due to over-extraction on Military-Leased Lands would not impact the southern aquifer system. Tinian residents already struggle to use groundwater resources sustainably, and any negative impacts to these resources due to proposed activities would have significant impacts to the population and the environment.

In regards to drilling new wells to provide potable water during the construction phase, DOD states, that "The pumping of groundwater from the proposed new military wells could potentially cause saltwater intrusion" (p.4-46). BECQ is very concerned about the possibility of saltwater intrusion, which would have profound effects on the drinking water for the Tinian community. The DEIS further notes that: "A potential concern about operating both Maui Well No. 1 and Maui Well No. 2 is that the effects of additional extraction on the water quality and saltwater intrusion have not been quantified. The CUC has apparently never operated both wells simultaneously, so the effects would have to be evaluated. An aquifer study has been

recommended to assess the production and quality that might be anticipated as a result of the increased groundwater extraction to meet the demands of the proposed action." (Appendix P, Volume III, p. 6-1) BECQ agrees with this recommendation: the DOD must conduct further studies on saltwater intrusion on Tinian.

BECQ would recommend that DOD also create a rainwater catchment system to augment their potable water supply. Rainwater catchment would decrease the volume of well water needed to be pumped and also reduce storm water run-off. Application of best available technology and practices identified in CNMI's 2006 Stormwater Manual would further support efforts to minimize and mitigate potential impacts.

The DEIS states that the proposed High Hazard Impact Area on Tinian contains "generally meager to small quantities of fair to poor quality water" and that there is "not likely to be a substantial groundwater resource in this area" (p.4-61). That the water may not currently be suitable for human consumption has no bearing on whether or not it may be polluted. Munitions and their constituents that land within a water course are polluting a water body of the CNMI according to CNMI law as outlined above.

Moreover, the possibility of climate change leading to 100-year storm inundation is more likely than in yesteryears. Failing stormwater collection and retention systems would make for increased loading into depressed areas such as Lake Hagoi and the adjacent Mahalang Complex. Given this, DOD should carefully reconsider capping all unused wells in the military lease areas of Tinian as proposed. Some wells could be used as monitoring wells for early detection of contamination, as well as for extraction purposes should contamination be found, in the off chance that the proposed firing ranges would be allowed.

Pumping of groundwater is also of concern, especially in relation to MCs. TNT with its solubility of approximately 150 mg/L would be expected to dissolve and undergo environmental transformations. The Issue Paper, discussed above, states, "Amino transformation products of TNT can covalently bind to soil organic matter and become immobilized (Thorn et al. 2002)." However the less soluble HMX "...does not strongly interact with soils and can be carried through the vadose zone to underlying groundwater aquifers (Martel et al. 2009b)." This is a concern for pumping wells that provide the military with potable water, as they may potentially aid chemical transport of MCs.

A 2003 study of Vieques munition sites by Dann Block supports this finding by stating that, "The hydrology of the site provides for the movement of groundwater from the land to the ocean," and "if the island is developed with hotels and resorts, as is likely, these establishments may need to augment their water supplies with wells and this may alter the hydrology of the island, pulling contaminants into the groundwater under these settlements. Installing a peremiter (sic.) of extraction wells around the polluted areas and extract all groundwater for treatment at a decontamination facility can prevent the spread of contaminants" (Block 2003).

- ***Page 4-50:*** The DEIS notes that **"**[g]roundwater could potentially carry munitions constituents from training facilities to nearshore waters through the porous limestone, affecting nearshore water quality. These impacts would be minimized by employment of resource management measures described in Section 4.3.2." The resource management measures are not modeled to provide information about removal rates of said pollutants.

It is understood that testing soils for MCs is complicated and requires statistically defensible sampling regimes. The EPA Issue Paper states that these compounds will be hard to measure as they are "mostly present within the soil moisture fraction, which is quite small compared to the mass of soil." Although difficult to detect, methodologies are available to establish baselines and inform periodic monitoring. Reports from monitoring should be made available to agencies, and BECQ encourages coordination in the development and implementation of environmental management plans and standard operating procedures described in Marine Corps Order (MCO) 5090.2A in order to ensure hazardous waste practices protect human health and the environment. BECQ requests that all data and reports generated through periodic monitoring and "problem solving efforts" be provided.

- ***Page 5-23:*** DOD discusses the quality of Pagan's ground water resources in regards to its portability, or salt content. This has no bearing on determining potential impacts from its extraction or contamination by munitions. Saipan's waters are also greatly affected by saltwater intrusion, although this does not preclude it from being used as a potable source. Salinity is only a secondary water quality standard, not an enforceable primary standard. Hence its continued use by the population.

BECQ is also concerned about the effects of relocating cattle grazing form northern Tinian to southern Tinian. The Tinian CUC Public Water System is currently using a single water source, the shallow Maui type well that obtains water from below the wetland in Marpo Valley. Relocation of cattle grazing from northern Tinian to southern Tinian may impact the quality of the groundwater water obtained from the single water source.

Use of LCACs and AVs

BECQ is concerned that the use of LCACs and AVs will have a significant impact to water quality around Tinian and Pagan. The DEIS states that ramp construction at Unai Chulu could "result in localized turbidity; decreased water clarity and quality (e.g., reduced dissolved oxygen, photosynthetic potential, and increased nutrient load); or benthic siltation of marine resources that could individually or collectively impact the ecological health of the nearshore environment." (p.4-37) More information is requested regarding the extent of these effects and how they will impact wildlife and habitat. This adverse impact to water quality falls under BECQ's jurisdiction as these are waters of the CNMI and are required to meet the CNMI WQS for turbidity, dissolved oxygen, nutrient load, support aquatic life and propagation uses.

Therefore, this activity would have a direct impact on Aquatic Life and Propagation designated uses.

BECQ is also concerned about the possibility of LCACs and AVs shedding pollutants into CNMI waters. The DEIS discusses pre- versus post- development hydrological analysis and storm water management from impervious services (p.4-38). There is no mention of water quality monitoring pre-or post- amphibious tactical maneuvers when heavy metals, grease, oils, and other hydrocarbons can be chipped or washed off the vessels into the near shore environment and surrounding waters.

CNMI WQS stipulates that "all surface waters shall be free of substances attributable to domestic, industrial or other controllable sources of pollutants and shall be capable of supporting desirable aquatic life and be suitable for recreation in and on the water." Waters are "subject to verification by monitoring as may be prescribed by the Administrator to assure freedom from any of the following conditions: …(2) floating debris, oil, grease, scum, or other floating materials…. (4) High temperatures; biocides; pathogenic organisms; toxic, corrosive, or other deleterious substances at levels or in combinations sufficient to be toxic or harmful to human health or aquatic life, of in amounts sufficient to interfere with any beneficial use of the water." And, "all waters shall be free from toxic pollutants in concentrations that are lethal to, or produce detrimental physiological responses in human plant or animal life." This would dictate the need for DOD to commence baseline testing of water quality parameters prior to any proposed exercises commencing and at a sufficient frequency thereafter to detect impairments IF activities were approved to commence thereafter. Testing or monitoring every 12 months would not be considered sufficient, as Tinian near shore waters must be regularly monitored by BECQ WQS/NPS Branch in keeping with CNMI BEACH grant requirements, as an amendment of the US CWA.

Additionally, the DEIS also notes that construction of the amphibious beach landing area, "could result in the accidental release of pollutants (e.g., petroleum, oils, and lubricants) resulting in impacts to nearshore water quality." However, DOD fails to discuss these same pollutants (e.g., petroleum, oils, and lubricants) that would result from regular amphibious training. It is expected that these pollutants will wash off the surface of the vehicles into the nearshore waters, as no petroleum powered vehicle is completely devoid of surface pollutants, no matter the degree of maintenance attained. CNMI WQS stipulates that the concentration of oil or petroleum products shall not be detectable as a visible film, sheen or discoloration, nor shall it form deposits on beaches, shoreline or the bottom of a body of water.

As to the unplanned, yet most probable event of a "spill" from amphibious landings, the DEIS suggests that this would be addressed by personal awareness (visual observations) and by standard spill response. Being addressed is not the same as being prevented. To state that soldiers learning to maneuver an amphibious vehicle are going to be cognizant of a potential action that would result in a spill, when they are simply trying to master the basics of driving a unwieldy behemoth from a dynamic and energetic shoreline (as Babui and Chulu are known to be) on to

shore is preposterous. Even on-site instructors are going to be more engaged in the soldiers' maneuvers and protecting this valuable piece of equipment from being damaged than watching for spills or vehicular "wash off".

There is also an abrupt statement about the use of "water repellant grease" (p.4-50) on the track mechanism of amphibious assault vehicles to prevent "wash off". However, there is no information regarding the content of said grease, organic or inorganic otherwise. There is also no information about how this "grease" is kept from contaminating the beach front once the vehicle has landed. Thousands of dollars are spent by the CNMI to remediate oil and grease spills on near shore habitats. More needs to be included on how these pollutants will be prevented from entering the near shore ecosystem.

The DEIS states that Turbidity and suspended sediment, "[o]bservations from Landing Craft Air Cushion operations at Unai Chulu … documented that the sediment plumes generated by these vehicles are likely not qualitatively different from naturally occurring turbidity during periods of storm-generated waves that routinely occur on Tinian" (p. 4-50) This statement is unsubstantiated with any water quality tests. Turbidity and Total suspended solid samples cannot be determined by the naked eye. DOD should have had the foresight to collect and analyze samples in 1999 to support these claims given their understanding that they would return in subsequent years with other EIS's for military operations.

DEQ personnel were present during the military's 1999 amphibious landings on Unai Chulu as observers. These personnel could easily have assisted with sample collection for testing.

Without supporting data one cannot assume that "operations would result in less than significant impacts to nearshore water sources," nor can it be claimed that increased turbidity, erosion, sediment transport, and accidental discharge of pollutants would be temporary. The DEIS has made clear that the combined level of training will be for at least 20 weeks each year with the potential to escalate to 40 weeks per year in perpetuity. This therefore, is not a temporary situation, but a recurring one.

Impacts to Surface Waters including Wetlands

BECQ does not agree that there would be "no impact" or "less than significant impacts" to Tinian or Pagan's surface waters and wetlands. The surface waters and wetlands adjacent to proposed high impact areas on Tinian and Pagan and their associated stream systems (wet or dry) have been designated as Class 1, Tier Two waters. The CNMI WQS mandates that "It is the objective of this class of waters to remain in their natural state as nearly as possible with an absolute minimum of pollution from any human-caused source. To the extent possible, the wilderness character of such areas shall be protected." BECQ is particularly concerned with potential MC contamination, stormwater runoff issues, and the planned destruction of wetlands.

Additionally, DOD restricted their definition of a "wetland" to what is defined using U.S. Army Corps of Engineers (USACE) criteria under Section 404 of the Clean Water Act. In the Definitions section of the CJMT DEIS/OEIS the following is stated:

"Wetland: Wetlands are defined by Section 404 of the Clean Water Act as: "*areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas*." The Commonwealth of the Northern Mariana Islands Water Quality Standards define wetlands as "*waters of the Commonwealth*" and state that "*all wetlands are subject to the provisions of the standards. Areas described and mapped as wetland communities may also contain small streams, shallow ponds, and lake edges. A* jurisdictional wetland *is a wetland that meets all three U.S. Army Corps of Engineers criterion for jurisdictional status: Appropriate hydrologic regime, hydric soils, and facultative to obligate wetland plant communities under normal growing conditions*."

Appendix L4 of the DEIS states: "*The purpose of the wetland surveys is to determine whether potential wetland sites within the Military Lease Area (MLA) on Tinian meet the definition of U.S. Army Corps of Engineers (USACE) jurisdictional waters under the Clean Water Act (CWA) (33 U.S. Code 1344 Section 328). While this report describes the wetland attributes of the surveyed sites relative to the CWA, it should be noted that the USACE must make the official determination of whether those sites fall under their regulatory program. Only after the USACE determines their jurisdictional authority over these sites would a wetland delineation become necessary. If applicable, results of the wetland surveys will be used in CWA Section 404 permitting processes*." Wetlands can be wetlands without being jurisdictional. The DEIS should clarify that it assessed the presence of wetlands solely for the purposes of USACE jurisdiction, and not for other purposes. These may well still meet the classification of wetlands under USFWS definitions, DCRM definitions, and in terms of providing habitat for endangered species.

The USFWS uses the following definition: "Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports hydrophytes, (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year" (Cowardin, 1979).

To comply with NEPA requirements the assessment of Tinian's wetlands (inaccurately described in the DEIS as a delineation) should be expanded to include USFWS and DCRM definitions of wetlands. CNMI regulations require that "[s]ignificant adverse impact on natural drainage patters, the destruction of important habitat, and the discharge of toxic substances shall be

prohibited" and that "[c]ritical wetland habitat shall be maintained and, where possible, enhanced so as to increase the potential for survival of rare and endangered flora and fauna" (CNMI Administrative Code Section 15-10-330(b)). While the DOD's DEIS notes that Pagan Alternatives "would affect Shoreline and Lagoon and Reef Areas of Particular Concern," (p. 4-169) these actions may also affect the Wetlands APC. BECQ encourages DoD to include an assessment of these impacts and supporting reports as well as proposed mitigation measures in the FEIS so that the agency can provide meaningful comments during the NEPA process.

Funding of cleanup

Finally, DOD fails to mention how much funding will be set aside for contamination prevention or clean up in preparation for when their lease agreement is up. BECQ requests that DOD detail the environmental liabilities associated with the proposed actions as well as the environmental funds that will be earmarked to ensure environmental compliance, protection, and restoration as envisioned under MCO 5090.2A. BECQ further requests coordination regarding assessment of potential environmental impacts as described in Department of Defense Operational Range Assessments Directive 4715.14 (DOD Directive 4715.14) and encourages DOD to include information regarding what avoidance, minimization, and prevention measures will be in place in order to allow meaningful assessment of proposed actions in the FEIS. DOD Directive 4715.14 instructs that the Secretary of Defense (Comptroller)/ Chief Financial Officer provide financial management policy regarding funding to respond to identified releases or threatened releases of munitions constitutions of concern from an operational range to an off-range area (DOD 2005, 5.3.2); BECQ urges funding be set aside to respond to on-range releases as well, and requests that reports regarding threaten or actual releases and remediation activities be provided to CNMI in order to ensure optimal protection of environmental and human well-being. As noted in the Procedures of DOD Directive 4715.14, the operational range assessments conducted aim to "assist the DoD Component in determining whether there is a release or substantial threat of a release of munitions constituents of concern from an operational range to an off-range area, and, if so, whether the release creates an unacceptable risk to human health or the environment. These assessments shall be consistent with appropriate Federal and State guidance" (DoD 2005, 6.2). As a reminder, CNMI regulations prohibit discharges of toxic pollutants into wetlands, lagoons and reef APCs (CNMI Administrative Code Section 15-10) and from wastewater treatment facilities (CNMI Administrative Code Section 65-120).

According to CNMI Hazardous Waste Management Regulations 65-50-910(d): For purposes of RCRA section 1004(27), a used or fired military munition is a solid waste, and, therefore, is potentially subject to federal RCRA corrective action authorities under sections 3004(u) and (v), and 3008(h), imminent and substantial endangerment authorities under section 7003, or DEQ enforcement authorities under part 1300 of this subchapter or any other DEQ applicable authority, if the munition lands off-range and is not promptly rendered safe and/or retrieved. Any imminent and substantial threats associated with any remaining material must be addressed. If remedial action is infeasible, the operator of the range must maintain a record of the event for as

long as any threat remains. The record must include the type of munition and its location (to the extent the location is known).

Thus management of munitions both on range and off range are required to ensure there are **no threats** to human health or the environment – by regulatory definition any threat is unacceptable and must be mitigated until risk to human health or the environment has been remediated.

BECQ encourages the DOD to include procedures for managing and disseminating communications regarding range operations with CNMI agencies, and to include CNMI agencies in the development of the operational range assessment plan or plans, as well as response activities should a release of hazardous munitions components occur.

Tinian

On Tinian, the CJMT plans to remove two ponds within the Mahalang Complex. BECQ DRCM has a no-net loss wetland policy and is concerned about the loss of these wetlands. The DEIS states that "The majority of the Mahalang Complex is located within the Range Complex A, with the exception of a small portion on the western border of the High Hazard Impact Area. The High Hazard Impact Area would not be utilized during Maneuver Area (Light Forces) training *thus protecting the portion of the Mahalang Complex* within Range Complex A, not already permanently impacted during construction, from potential direct impacts associated with foot traffic." (4-48, 4-49). BECQ disagrees that avoiding the wetland *sometimes* is equivalent to protecting it, especially when these protected ecosystems are located within the "High Hazard Impact Area" where negative impacts can be expected. There will be an 8% loss of the Mahalang Complex if the CJMT goes through. Any loss of wetland areas should be compensated with a greater than 1:1 replacement ratio – best available science supports a range of 1:4 to 1:6 replacement ratios to address loss of habitat values and function with created wetlands.

BECQ is very concerned about the close proximity of Lake Hagoi, the Bateha sites, and the Mahalang complex on Tinian to the proposed ranges. The DEIS states that Range Complex C is located directly adjacent to Lake Hagoi. There may not be any construction or training within Lake Hagoi or the Bateha isolated wetlands, but claiming that munitions being fired in close proximity to watercourses, wetlands and a lake, will not leach to low lying areas is not defensible by the information provided in the DEIS, nor by the findings in the other independent studies cited and discussed above.

The potential for chemical transport of the grenade MCs to these low lying ground water recharge areas is especially of concern given that DOD recognizes in that, "Drainage throughout most of Tinian is internal (underground), and water generally percolates downward into porous limestone rock" (p.4-44).

Stormwater runoff within the High Hazard impact area would likely result in chemical transport of MCs into the lower lying Mahalang complex, an aquifer recharge area. Burning vegetation in this area will only serve to increase chemical transport through the denuded surface into ground water.

Using this low lying ground water recharge area, within the FEMA '100-year flood zone', which is also a CNMI Area of Particular Concern, as the chosen location for a "High Hazard Impact Area" is nonsensical from an environmental resource protection standpoint. It would be hard for one to choose a more inappropriate site than this to detonate munitions with heavy metals and other toxic MCs with the propensity to migrate through the subsurface and contaminate nearby surface and ground water (Issue Paper *citing* Clausen et al. 2004, Jenkins et al. 2001, Martel et al. 2009b, and Chapter 3 in Pennington et al. 2006). BECQ strongly urges that High Hazard Impact Areas not be sited in or adjacent to ecologically sensitive areas that are designated as CNMI "Areas of Particular Concern".

The DEIS states that: "Currently, the health of the surface waters is dependent on rainfall" (p.5-21). It is not at all clear what is meant by this statement. The "health" of a wetland is not dependent on rainfall; perhaps the salinity is, but not its "health". DOD states that the wetlands will continue to decline but fails to explain exactly why they believe this to be true. Further, they refer to the Makpo wetland as a "swamp", a term that long ago fell out of favor by wetland and other environmental resource managers, due to its derogatory nature in respect to the importance of wetlands hydrological function and importance to ecosystem health. The FEIS should account for the high value and protected status of wetlands as well as other Areas of Particular Concern and proposed actions should reflect efforts to avoid and minimize negative impacts to these systems.

The DEIS states that "Tinian Alternative 2 construction of activities would result in no impacts to Lake Hagoi or the Bateha isolated wetlands; less than significant direct and indirect impacts to the Mahalang Complex (as described under Tinian Alternative 1); and less than significant direct and indirect impacts from flooding hazards and to surface water quality, groundwater resources, and nearshore waters" (p. 4-48).There is no basis for these statements; criteria or threshold levels, on which to substantively defend a "less than significant direct and indirect impact" determination on the part of the military, given the amount of destruction and potential polluting contaminants that would be expected from the proposed DEIS activities

Pagan

In regards to MCs transport to surface waters and wetlands on Pagan the DEIS states the following:

- ***Page 4-59:*** "During a rare emergency event, sediment and hydrocarbon runoff from military vehicles using the training trail could impact Laguna Sanhiyon water quality."

The DEIS fails to mention what emergency events are anticipated. The fact that runoff from military vehicles are discussed for Pagan, but never for Tinian suggests that activities to be conducted on the more remote island of Pagan may be expected to be more disturbing to island habitats, or otherwise pose more threat to the surrounding environment than those for Tinian. This gives cause for BECQ to consider whether these are mere inadequacies of a quickly assembled and not well substantiated DEIS, or intentional omissions to conceal what will be conducted away from regulatory observers.

As noted in Appendix R, DOD activities must comply with federal and territorial laws and regulations. Many of these laws and regulations require preemptive planning and periodic reporting, and BECQ invites DOD to work with agency representatives to ensure compliance, coordinate inspections, and ensure standard operating procedures to address risks associated with the proposed activities are in place before live fire trainings commence. When local regulations are more stringent than federal laws the spirit of these regulations should be considered and addressed in the environmental impact assessment as well as pollution prevention and control plans and measures should the proposed actions in the CJMT be implemented.

- ***Page 4-60:*** "Stormwater runoff from the northern High Hazard Impact Area could transport munitions constituents to Laguna Sanhalom and Laguna Sanhiyon either as surface runoff or sub-surface conveyance, resulting in indirect water quality impacts to those surface waters."

The extent of the impact to water quality is substantially downplayed. This impact is direct in that Laguna Sanhalom and Sanhiyon are adjacent to the proposed activities. During storm events a nexus of connection between the proposed training sites and the lakes is expected to occur.

Even with management measures in place the conveyance of MCs from repeat firing exercises would result in significant impacts to these invaluable Class 1, Tier 2 waters, which could lead to significant bioaccumulation for grazing animals, fish, and shellfish.

The DEIS goes on to state that the soils on Pagan have a fractured surface geology. Even with careful placement of firing range targets, it is unlikely that, "storm water runoff potentially transporting munition constituents would drain away from the lakes" (p. 4-60). That is, unless a great deal of construction is used for confinement, which in itself would significantly alter the surrounding terrestrial habitat. The DEIS provides no basis for the claim that storm water would follow any path other than the path of least resistance; physics and hydrogeology make a strong case for the conclusion that sediment and particulate materials produced in the High Hazard Impact Zone(s) would drain down-slope and will more likely than not negatively impact the water quality and ecosystems of the receiving waters below.

There are exceptions made, the DEIS states that, "the two targets due west of Mount Pagan, which would potentially drain to Laguna Sanhalom via surface flow and to both Laguna Sanhalom and Laguna Sanhiyon via sub-surface flow." This contaminated surface flow is not permitted in Class 1, Tier 2 waters.

As the DEIS has already stipulated that monitoring of these ranges would only occur after the first 12 months of exercises, and then every five years thereafter, monitoring to create an adaptive management plan to reduce potential impacts would already have allowed a great length of time for contamination to accumulate. These pollutant discharges into CNMI surface waters and wetlands are in direct violation of CNMI WQS anti-degradation policy.

Military Range Maintenance

It is unclear why the use of slash and burn techniques would be proposed in the DEIS for maintaining vegetation in the tropics, which are known for erosion prone to erosion soils, as opposed to mowing or other less harmful maintenance practices. Labrie're, et al, in their 2015 study state that, "Quantitative analysis of the collected data revealed that soil erosion in the humid tropics is dramatically concentrated in space (over landscape elements of bare soil)." The study goes on to say, "Soil erosion has multiple on- and off-site consequences such as decreasing crop yields, increasing atmospheric CO2concentration, decreasing water quality (turbidity and particle-born pollutants), sedimentation of reservoirs, and disturbed hydrological regimes such as increased flood risk due to riverbed filling and stream plugging" (*citing* Chomitz and Kumari,1998; Lal, 2003; Millennium Ecosystem Assessment, 2005; Morgan,2005; Locatelli et al., 2011).

Continued use of burning for maintaining vegetation has long been shown to lead to soil degradation, loss of arable farm lands, and supports the establishment of introduced invasive plants and other species. In addition to the waste and poor environmental management practices, DOD would be required to spend expansive amounts of funding in remediation of these areas in preparation for their return to CNMI Department of Public Lands.

The fact that it is proposed in this DEIS to maintain an area used for munitions is incomprehensible, unless this method has alternative value for DOD, e.g., a means to destroy unused munition propellants, which is reported as the usual method as cited in the EPA Issues Paper. Specifically, it notes that "[t]he general practice is to destroy this unused material in the field by piling up the material or laying it in a line on top of the soil and igniting it." The Paper goes on to state that a study by M.R. Walsh et al. found that the "Propellant residues recovered in burn areas were large compared with those deposited from firing activities with the same propellant and were deposited over a smaller surface area resulting in higher concentrations in the soil" (*citing* M.R. Walsh et al. 2010a).

In regard to managing ground cover vegetation, DOD states:

- ***Page 4-48:***"Following the completion of Construction, vegetation within the Tinian RTA would be allowed to reestablish or managed at allowable heights." And "Controlled

burning may be used to manage vegetation within Range Complex A, which could create temporary increases in soil erosion during periods of vegetation grow in."

Burning would also result in the height of the vegetation to be reduced to ash. This contradicts their intent. Burning should not be used to manage vegetation, not only due to potential increases in soil erosion, but also because of air quality and the potential for "controlled burning" to become quickly out of control in tropical settings. DOD does not address how they would ensure containment of the burn nor do they discuss how this fits in with the military's commitment to reducing its carbon footprint. Due to concerns about wildfire and air quality, burning activities are not allowed in CNMI without a permit, and should not be adopted as a common management practice for a project that is mandated to avoid, minimize, and lastly mitigate environmental impacts.

Additionally, DCRM rules and regulations consider this action as a reviewable action as it is to be conducted within an Area of Particular concern. As stated in Section 15-10-301 General Standards for all CRM Permits: "In the course of reviewing all APC permits and major siting permits, the CRM agency officials and the DCRM Director shall require the applicant to demonstrate by a fair preponderance of evidence that the project will not have a significant adverse impact on the coastal environment or its resources. The CRM program agency officials and Director shall also base their decisions on technical findings and the policy set out in section 3 of Public Law 3-47 (2 CMC § 1511). Adverse impacts may include but are not limited to those defined at § 15-10-020." The DEIS offers no insight as to how this activity would not create a significant impact to the coastal environment or its resources. As such, the proposed action would be impermissible without extensive minimization and mitigation.

Recommendations

- Should the live firing ranges be allowed, DoD must establish baseline levels for all potential Munition Constituents, their by-products, and other potential contaminants associated with military bases and firing ranges, including fuel and other petroleum products, and desalination brine and share this data as well as future monitoring plans and reports with relevant agencies including BECQ.
- Contaminants of concern must be monitored on at least a quarterly basis throughout the course of the Tinian lease agreement. Data and reports should be shared with CNMI agencies.
- Conduct a thorough study on the possibility of saltwater contamination to Tinian's groundwater and drinking water
- Contaminants are to be removed to baseline levels before clean up would be considered achieved. Contaminants and affected soil must be removed and disposed of off island. DoD

must provide a plan, funding, and an enforceable agreement with wherever the contaminants and soils are to be disposed.

- Develop a groundwater monitoring program for Pagan to collect baseline water quality information and measure impacts due to military activity and share this data as well as future monitoring plans and reports with relevant agencies including BECQ.

- Filling or removing or discharging toxic substances are prohibited in wetlands. Rescue simulations and other on ground exercises in the proposed exercises areas should only be allowed if live fire would not be used and there would be no clearing or burning that would negatively impact protected wetland habitats.

- Wetland delineations should be conducted using appropriate USFWS /CNMI definitions in order to enable DoD to establish "no action" protection zones. The addition of buffers to these zones is encouraged to further protect the quality and integrity of these protected systems. Coordination with BECQ and other relevant agencies to establish appropriate buffers and protection measures is encouraged.

- DoD should provide a cleanup schedule and contaminant removal plan for all proposed sites to allow for the return of the leased areas to CNMI control after the expiration of the military lease.

- Given the remoteness of the pristine island ecosystem and the foreseeable, significant, and permanent impacts associated with all proposed activities, live-fire training that results in addition of pollutants to aquatic environments are prohibited according to BECQ WQS. Therefore, from the perspective of CNMI environmental protection regulations only non-live-fire training "search rescue exercises" would be allowable following coordination and approval with the CNMI government.

- All of the proposed activities on Pagan, including live fire and amphibious landings proposed in the DEIS for Pagan would result in an unacceptable significant impact to the adjacent surface waters and wetlands. If DoD were to engage in these actions, substantial additional avoidance and minimization should be considered and additional mitigation would be necessary. BECQ encourages DoD to share data and proposed mitigation plans with relevant agencies throughout the planning process.

- DoD must consider the use of available rainwater to support human uses at training encampments and facilities, not only to augment limited ground water supplies, but also to reduce the volume and flow of stormwater to reduce flooding, erosion, sedimentation to surface and nearshore waters, and to prevent over pumping vadose zones resulting in salt water intrusion into aquifers and pulling MC contaminants into ground water supplies.

- To enable meaningful assessment of projected impacts the EIS must:
    - Provide a better and more detailed explanation of actions to be taken to prevent spills and "wash off" of petroleum products and other hydrocarbons from all motorized vehicles other than "visual observations" and spill response after the fact;
    - Provide a removal plan on how "water repellent grease" from amphibious vehicle tracts will be prevented from contaminating the near shore habitats, and removed if it contaminates this fragile ecosystem; and
    - Determine if relocated cattle grazing lands are in the area of influence of the Tinian CUC Public Water System well.

- Determine if relocated cattle will affect the Tinian CUC Public Water System well through runoff of waste or other means.

- BECQ notes that coordination is required by NEPA and has been disappointed by the cursory outreach undertaken thus far. BECQ encourages DoD to engage the agency in data collection, data sharing, and planning efforts to a greater extent in order to integrate existing best available information and respond to agency concerns in the FEIS.

Air Quality

The DEIS does not currently provide sufficient information for a meaningful analysis of direct, indirect, and cumulative impacts of the proposed action to air quality. Inadequate documentation of methodology used in "calculation backups" was included, potentially hazardous and toxic emissions associated with munitions were not documented or assessed, and improper Council on Environmental Quality (CEQ) guidance in regards to NEPA's assessment of greenhouse gas emissions was applied, making this section and its corresponding Appendix G (*Air Quality Technical Memo*) inadequate for purposes of a meaningful review of direct, indirect, and/or cumulative impacts to people and the environment. In Chapter 5.3.4 the DEIS acknowledged that the proposed actions posed present and reasonably foreseeable future impacts but did not conduct a meaningful analysis of the extent of these impacts as required by NEPA.

BECQ notes that long-term effects were not addressed in the DEIS – cumulative ground level air emissions were not modeled and were not considered in the context of sensitive receptor populations and endangered species habitat on Pagan and Tinian; in fact air impacts were found to have no cumulative potential (5-15, 5-16). The discussion of air quality including greenhouse gases in 5.3.4 was similarly inadequate (see 5-24 – 25). Projected emissions levels of hazardous and toxic pollutants were not addressed, and lead was not included in discussion of criteria pollutants.

Additionally, as discussed below, revised analysis should include meaningful discussion of short and long-term direct, indirect, and cumulative greenhouse gas emissions under the updated CEQ 2015 NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions.

Because impacts were not properly assessed, options for avoidance, minimization, and mitigation were not provided in the DEIS discussion, and mitigation recommendations could not be furnished by BECQ due to aforementioned lack of data.

Shortcomings in Air Quality Emissions Assessment and Corresponding References

As noted in the DEIS, both Pagan and Tinian are considered "in attainment" for all criteria pollutants (p. 4-65). Subchapter 4-4 purports to provide a summary of the calculations included in Appendix G. Emission factors related to construction delivery trucks and operational use of training vehicles were modeled using the U.S. EPA's MOVES2010b emission factor model using the database for the U.S. Virgin Islands. Model-established emissions factors were multiplied by the annual vehicle running hours to determine overall emissions on an annual basis (p. 4-66 - 68). Additionally, U.S. EPA's *Compilation of Air Pollution Emission Factors* was also used to predict particulate matter components in fugitive dust emissions from training vehicles (U.S. EPA, 1995, p. 4-68). In the limited discussion of emissions from weapon firing in

4.4.1.2.5, the DEIS stated that "[a]ir emissions potentially occur during each weapon firing" and that these "[e]mission releases may occur during the launching of a projectile, from the propellant charge at firing position, and from the detonation explosion of the projectile in the vicinity" and that U.S. EPA has "published emission factors mostly in draft forms for various munitions in the AP-42 guidance. These emission factors for weapons firing and explosive detonation were used to predict overall munitions emissions" (p. 4-68). However, this data does not include lead emissions, and specific emissions calculations are not detailed or provided in Chapters 4.4, 5.3.4, or Appendix G of the DEIS. Emissions for support equipment such as water and fuel trucks, forklift, and mobile and stationary generators were based on the AP-42 Emissions Factors and 2008 NONRoad model database (p. 4-68), and operational hours were listed in the appendix, but information regarding how operational hours were estimated for each vehicle each year was not provided to support calculations of the projected emissions associated with these operations. It is further incredible to claim that these emissions can be averaged over the ten-year construction phase when clearly certain activities will be associated with substantially more emissions than others. Explanation of assumptions used in these calculations is needed in order to conduct a meaningful analysis of methodology, impact assessment, and potential mitigation measures. Modeling of direct, indirect, and cumulative impacts for each year of construction coupled with anticipated emissions from live fire operations should be combined to provide a more realistic accounting of likely air impacts from these proposed activities. Should the proposed activity be conducted, monitoring plans that include funding for adaptive management interventions should be in place before construction or operations commence to assess actual emissions and ensure that air quality of the CNMI is not impermissibly compromised due to these activities. BECQ requests coordination in this iterative planning process and that DoD provide periodic reports of emissions monitoring to DEQ and any other interested agencies or individuals.

Chapter 7 of the DEIS references https://www.aiha.org/ for the 1995 U.S. EPA *Compilation of Air Pollution Emission Factors.* The hyperlinked guidance provides thirty-one pages of chemicals listed under EPA's Emergency Response Planning program, however, the actual chemical releases associated with the weapons that will be used in live fire training are not detailed in either Chapter 4.4, Chapter 5.3.4, or Appendix G. Additionally, more current emissions factors and updated AP-42 guidance is available from US EPA (EPA 2014a) and should be applied for the purposes of quantifying air emissions that are likely to occur from the proposed actions and to classify the significance of the impact of these emissions to people and the environment in the CNMI (see US EPA AP-42 Fifth Edition, Vol. 1 Ch. 15: Ordinance Detonation, 2007 - 2009). Anticipated air emissions of chemicals of concern, including known toxic and hazardous substances, should be included in the FEIS to support meaningful analysis of this proposal as required by NEPA.

As discussed in more detail below, in addition to providing details to address which listed chemicals are known or likely to be discharged from the use of each munition type,

concentration projections in relation to Emergency Response Planning Guidelines (ERPG) levels and "Lower Explosive Limit Warnings" as well as OSHA and National Ambient Air Quality Standards (NAAQS)[1] limits should be provided in order to assess potential impacts to human populations and the environment. Where known or suspected emissions may negatively impact the terrestrial or marine environment or human health, this DEIS should also detail what those impacts may be and the potential direct, indirect, and cumulative impacts of those impacts in order to satisfy NEPA requirements and provide sufficient information for assessment and comments. The most current AP-42 emissions factors for all criteria pollutants as well as hazardous air pollutants and toxic chemicals (EPA 2014a) should be applied when applicable, and other relevant emissions information should be included whenever it exists in order to support the full assessment of impacts that are required for this NEPA review.

Emissions Should Be Assessed Applying Health Protective Air Quality Standards Including National Ambient Air Quality Standards (NAAQS) Standards for Criteria Pollutants and National Emissions Standards for Pollutants of Concern (Hazardous Air Pollutants and Toxic Chemicals) to Determine and Minimize Impacts

The DEIS states that air emissions "that may result from the proposed action are addressed in this study for all criteria pollutants with the exception of lead. Lead emissions have been reduced significantly over years as a result of federal programs to control vehicle emissions by eliminating the use of lead-containing fuel" (p. G-10). However, lead is a regulated pollutant of concern and lead emission factors are associated with certain munitions (Rehm et al., 2003),and thus any potential emissions should be documented and their impacts assessed in the analysis within this section. Any and all emissions that are classified as "hazardous" or "toxic" should be documented in the FEIS in order to support analysis of impacts and discussion of potential mitigation measures.

Additionally, when potentially hazardous emissions associated with the proposed actions are assessed, the direct, indirect, and cumulative effects of these impacts should be assessed using health-protective standards. Specifically, NOAA recommends that in cases of routine exposure to chemicals for long durations ERPGs shouldn't be used as guidelines, but rather, advises application of workplace exposure limits (NOAA 2015b) because they contain safety factors specific to that type of exposure; and that, furthermore ERPGs shouldn't be used as "guidelines for members of the public who are exposed to background chemical releases for longer durations" and that "[i]n these types of air quality issues, values such as the (NAAQS)should be used rather than emergency response guidelines" (NOAA, 2015a). Because members of the public are likely to be exposed both through occupational exposure due to proposed on-site jobs

[1]Because of the presence of sensitive nearby receptors – both human and ecological –BECQ urges the DOD to apply high pollution control standards in order to minimize risks to people and the environment to the greatest extent practicable. Specific details regarding facility and operations emissions should be included in the FEIS to determine if any of the proposed new sources associated with this installation would emit in aggregate 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants.

and environmental exposure due to proximity to sources of concern, modeled emissions levels for all listed pollutants should be assessed and detailed for the purposes of identifying and mitigating potential direct, indirect, and cumulative impacts of regulated air pollutants on human populations due to exposure from activities associated with this proposed action.

Emissions Data Should Be Replicable and Assumptions Should be Clarified

Chapter 7 of the DEIS references www.epa.gov/otaq/nonrdmdl.htm#model for the 2008 NONRoad database, but neither Appendix G nor the referenced webpage provide information or justification as to what specific models were used or how assumptions regarding operational hours were made thus providing insufficient information for a meaningful assessment of this analysis. BECQ requests that DoD provide details needed to replicate modeling or provide actual data from these models and explain assumptions made regarding operating hours and other related factors such as vehicle maintenance in order to provide sufficient information to support assessment of environmental impacts and discuss potential mitigation of these impacts. Baseline data should be gathered and modeling should be applied to support analysis of direct, indirect, and cumulative impacts that are likely to result from and which may impact the environment in the proposed action areas in order to support a meaningful analysis of these impacts in the NEPA review process in the FEIS.

Significant Emissions of Regulated Criteria Pollutants

Degradation of air quality through significant emissions of regulated criteria pollutants seems likely and is not well quantified in the DEIS. Appendix G notes that "given the lack of specific construction schedule for individual projects … the total construction emissions were evenly distributed in each construction year" – thus, on Tinian, total predicted air emissions in alternatives 1 through 3 were evenly divided over 9 years (p. G-20). It seems more likely that certain periods may see more construction activities than others, and thus, would produce higher than the averaged emissions. If operations are also taking place, those operational emissions should also be included in annual totals. Any annual emissions that exceed health-based air quality standards should be considered significant impacts and measures to avoid, minimize, and mitigate air quality impacts should be incorporated into the proposed action and reflected in the FEIS in order to avoid detrimental impacts to human and environmental health.

In discussion of operational emissions, the DEIS briefly mentions the fact that the average annual emissions for Tinian Alternatives 1, 2, and 3 exceeds the 250 ton threshold for CO and NOx, and approaches this threshold for PM_{10}, with levels reaching 375.14, 396.45, and 222.42 tons per year respectively (p. 4-70, see also Appendix G Attachment 8, p. G-125). Annual CO2 emissions from training operational activities are anticipated to be 37,081.4 tons per year on average on Tinian. On Pagan, averaged annual emissions of NOx exceed regulatory thresholds by nearly two fold, with 449.69 tons projected each year, and an additional 15462.64 tons of CO2 emissions. Given the fact that these islands are currently attainment zones with high quality

air, as well as the human and environmental health concerns associated with such high emissions levels, these changes should be considered significant. Instead, the narrative discounts the impacts of these pollutants by concluding that, for Tinian, because "[m]ore than 70% of CO and 50% of NOx emissions would be generated by aircraft and marine vessels" ground level emissions would be less than the comparative impact threshold, and would be dispersed by winds, therefore resulting in less than significant impacts to air quality (p. 4-70, see also Appendix G-27). Similarly, for Pagan, the DEIS notes that because "[a]pproximately 75%of NOx emissions would be generated by ground training vehicles" and there are "no sensitive land uses" and trade winds would disperse emissions toward the ocean, the substantial exceedance of NOx emissions limits and other air pollutants were also "less than significant impacts" (p. 4-74 - 75, Appendix G-27). This conclusory analysis does not appear to be based on modeled data and does not account for the sensitive populations on Tinian and environmental receptors on both islands or the significance of long-term exposure to pollutants with known negative impacts. The entirety of Pagan is a conservation area, and, with several populations of endangered animals that use land and sea resources as habitat and breeding grounds. The potential direct, indirect, and cumulative impacts of regulated pollutants should be considered, especially as they pertain to sensitive human and environmental receptors. In Tinian, where there are known locations of vulnerable and potentially resilient coral reefs, as well as listed terrestrial and marine endangered species and sensitive human populations, the full impacts of the annual emissions of the proposed actions should be considered, avoided, minimized, and mitigated in regards to all air emissions of concern, including criteria, hazardous, and toxic chemical air pollutants as well as greenhouse gas emissions.

Emissions of high levels of criteria pollutants as well as listed hazardous and toxic pollutants should be avoided and minimized wherever possible. If activities of the proposed actions will exceed thresholds for criteria pollutants on Tinian and Pagan, mitigation to protect air quality, including planting of native tree species, use of lower-emissions vehicles, deployment of renewable energy generation and energy efficient technologies should be implemented on- and off-site in order to offset significant negative impacts to air quality in the CNMI. If the Final EIS reveals substantial air emissions of lead are projected due to proposed munitions use, DoD should consider reducing the amount of use of lead-containing ordinance and funding programs to remediate negative impacts to the environment as well as address the potential long-term human health impacts of lead exposure, including funding health facilities and supporting social services such as mental health and law enforcement, as lead exposure has been linked to increases in physical and mental disease as well as crime. (Lanphear et al 2005, Nevin 2007, Sanders et al 2009, Wright et al 2008) Given the significant and extensive impacts of lead exposure to people and the environment, the Final EIS should include any and all information addressing likely lead air emissions, potential direct, indirect, and cumulative health effects of this criteria pollutant.

Without robust modeling and monitoring of on-the-ground emissions and associated effects, the substantial addition of numerous listed air pollutants should not be considered a "less than significant" impact; in fact, given the relatively good air quality on Tinian and Pagan, substantial addition of air emissions should be classified as significant and mitigated accordingly. If the proposed actions were to be conducted comprehensive monitoring, reporting, and, if necessary, compensatory mitigation should be included in this action plan to ensure significant negative impacts to the environment and human health are avoided. BECQ further requests any and all emissions data related to hazardous and toxic air emissions likely to occur with the proposed use be included in the FEIS in order to support a meaningful analysis of risks and mitigation measures.

Inadequate Assessment of Potentially Hazardous and Toxic Air Emissions Regulated Under ERPG

Given the potentially hazardous and toxic chemicals that are likely to become airborne during weapon firing and the large scale of proposed weapon use, BECQ finds that the short paragraph addressing these emissions in the DEIS inadequately addresses the direct air quality impacts of the proposed activities on Tinian and Pagan (Section 4.4.1.5, p. 4-68). This inadequacy is compounded by the fact that the proposed location for the Tinian activities is adjacent to the homesteading sites and San Jose Village, whose populations represent discrete and insular minorities that are likely to be exposed to increased environmental risk due to these activities – a concern that also received inadequate attention in chapters 3.15 and 4.15 regarding discussion of environmental justice.

The DEIS cited to U.S. EPA 1995 for AP-42 regarding 4.4.1.2.5 "Weapon Firing Emissions", however, no details were provided regarding the application of these emissions factors. Furthermore, US EPA provides more current emissions factors (EPA, 2014a) for Ordinance that should be applied in this assessment of any and all listed ordinance that will be used under the proposed actions. US EPA notes that sections of AP-42 that are designated as "draft" sections reflect the fact that the comment period on these sections has passed but not all issues have been resolved, but nonetheless encourages use of the draft emissions factors as they may provide better emissions estimates (EPA 2013).Emissions factors of ordinance that is not currently listed in this guidance should be projected using existing estimates or data. Without such assessment, the direct, indirect, and cumulative impacts to air quality as well as human and environmental health cannot be meaningfully assessed as required for this NEPA analysis. The FEIS should provide this data, assess impacts, and propose detailed mitigation measures to reduce the significance of negative impacts to human and environmental health due to air emissions from the proposed actions.

BECQ requests documentation regarding how weapons firing and explosive detonation were calculated, as well as a detailed assessment of air emissions associated with the munitions

proposed for use in the Tinian and Pagan actions, applying the best available emissions data and draft AP-42 emissions factors when available in order to conduct a meaningful analysis of the potential environmental and human health impacts of these discharges. Where data is not available, the FEIS should acknowledge data gaps and assumptions made to support best estimates of potential emissions and associated direct, indirect, and cumulative impacts. Additionally, if these discharges are expected to continue annually for the life of the project, which is presumed to be the duration of the current DoD lease and possible extension, the potential cumulative impacts of these discharges should be documented and discussed in Chapter 5 as both cumulative air quality impacts and potential environmental justice impacts.

Inadequate Assessment of Greenhouse Gas Emissions

Appendix G states that this "CJMT EIS/OEIS follows the Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions issued by the Council on Environmental Quality (CEQ) (2010). Although greenhouse gas emissions occur locally, the potential effects of greenhouse gas emissions are by nature global in scale, and accumulate geographically and over time. As individual sources of greenhouse gas emissions are not large enough to have an effect on global climate change, this CJMT EIS/OEIS predicts CO2 levels as appropriate for disclosure purposes" (p. G-13). CEQ's final rule was available for public comment in 2014 and published in 2015 and should be applied in this analysis (CEQ 2014).

The February 2010 draft guidance specifically did not apply to land and resource management activities. That distinction is no longer retained, and CEQ specifies that this revised draft guidance applies to all proposed Federal agency actions subject to NEPA.

Additional updates include the guidance that CEQ

i. "recommends that an agency select the appropriate level of action for NEPA review at which to assess the effects of GHG emissions and climate change, either at a broad programmatic or landscape-scale level or at a project- or site-specific level, and that the agency set forth a reasoned explanation for its approach;"

ii. "counsels agencies to use the information developed during the NEPA review to consider alternatives that are more resilient to the effects of a changing climate;" and

iii. "advises agencies to use existing information and tools when assessing future proposed action, and provides examples of some existing sources of scientific information."

The 2015 CEQ Guidance further instructs that:

"Agencies should consider the following when addressing climate change: (1) The potential effects of a proposed action on climate change as indicated by its GHG emissions; and (2) the implications of climate change for the environmental effects of a proposed action." …

'''Cumulative impact' is defined in the CEQ Regulations as the 'impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions.' **Consequently, agencies need to consider whether the reasonably foreseeable incremental addition of emissions from the proposed action, when added to the emissions of other relevant actions, is significant when determining whether GHG emissions** are a basis for requiring preparation of an EIS" (emphasis added). "Furthermore, agencies should take into account both the short- and long-term effects and benefits based on what the agency determines is the life of a project and the duration of the generation of emissions." Short-term analysis did not fulfill the requirements of current CEQ guidance, and long-term and cumulative impacts were not assessed. The FEIS should apply current CEQ guidance to fulfill NEPA requirements of identifying and assessing direct, indirect, and cumulative impacts of construction and operations of actions in the CJMT proposal.

This DEIS is further inadequate in regards to the current CEQ instructions in that (i) there is no reasoned explanation as to why the significance of greenhouse gas emissions associated with this proposal were summarily assessed as insignificant at a global scale despite the significant increase in emissions these actions would produce at the landscape or local scale; (ii) did not consider alternatives that are more resilient to the effects of climate change such as use of renewable infrastructure, lower emissions fuels, or lower emissions activities; and (iii) did not consider existing information and tools when assessing the proposed action and provide examples of existing sources of scientific information, including the resilience and vulnerability assessments for Tinian's coral reefs and for the CNMI regarding climate change impacts. The CNMI government has made strides towards reducing vulnerability of people and the environment in the Mariana Islands to climate change impacts, and activities that would undermine these efforts violate the constitutional right of the people of the CNMI to a clean and healthy environment. These impacts must be directly assessed and appropriate mitigation proposed in order to fulfill NEPA analysis requirements. Additional cumulative impacts such as increases in global flights for international training activities and loss of carbon sequestration functions of converted terrestrial and marine habitat should be considered and mitigation proposed in this analysis in order to satisfy NEPA requirements.

- Page G.1.4 notes the analysis of greenhouse gas emissions is as follows:
  "The air emissions analysis was performed for both construction and operational phases under each alternative. **All reasonably foreseeable emissions (both direct and indirect) associated with the implementation of the proposed action were quantified and compared to the 250 tons per year threshold on an annual basis to determine potential air quality impacts**. If the total emissions exceed this threshold, a further

evaluation of the emissions resulting from each activity element was conducted to assess the emissions impact on sensitive land uses on a local basis to determine the potential significance of the air quality impacts."

Because there is no baseline data for GHG emissions on Tinian and Pagan, DOD elected to use national data without adjustment (p. G-32). This comparison is not appropriate for a small and less developed island territory, in the context of a proposal where the population of an island will be doubled and where emissions from air and land travel as well as proposed use will cause a substantial increase in local sources of greenhouse gas pollution, in addition to the air pollutants of concern mentioned above. Locally reported emissions levels – such as those from Guam or USVI – would be more appropriate and should be considered, as was done for other regulated emissions analysis. Alternatively, total US population could be averaged by person and extrapolated to reflect a more appropriate estimation of GHG emissions in CNMI. The CNMI is leading efforts to address climate change in the Pacific Region, and the Climate Change Working Group has made commitments to work to reduce vulnerabilities and build resilience. The Department of Defense has also made commitments to addressing the global threat of climate change, and should not summarily dismiss the significance of the greenhouse gas emissions associated with this proposal. Local impacts of the proposed action that would undermine these goals should be considered, avoided, minimized, and mitigated. Appropriate mitigation projects could enhance or protect blue or green carbon sinks on the Military Lease-back Area or could fund projects such as shoreline re-vegetation, green infrastructure deployment, or adaptation planning in the CNMI.

Unacceptable Burning Proposed

As noted in the water quality discussion in the preceding section, in regard to managing ground cover vegetation, DOD states:

- ***Page 4-48:***"Following the completion of Construction, vegetation within the Tinian RTA would be allowed to reestablish or managed at allowable heights." And "Controlled burning may be used to manage vegetation within Range Complex A, which could create temporary increases in soil erosion during periods of vegetation grow in."

Burning should not be used to manage vegetation due to air quality concerns and the potential for "controlled burning" to become quickly out of control in tropical settings. DOD does not address how they would ensure containment of the burn nor do they discuss how this fits in with the military's commitment to reducing its carbon footprint and minimizing impacts of the proposed actions. Wherever possible air emissions should be reduced to ensure the proposed action areas remain high quality air attainment zones.

Recommendations

- Air emissions should be assessed to include modeled emissions levels reflecting National Ambient Air Quality Standards (NAAQS), Standards for Criteria Pollutants, and National Emissions Standards for Pollutants of Concern (Hazardous Air Pollutants and Toxic Chemicals) in order to optimally protect human health and the environment.

- Where projected emissions exceed allowable levels or are likely to degrade environmental quality and human health protected by the CNMI Constitution the intensity or extent of proposed activities should be reduced in order to comply with national air pollution protection standards to protect human health and the environment.

- 2015 CEQ Guidance should be applied to this section of the EIS. Greenhouse gas emissions should be avoided and minimized where ever possible.

- Where data does not exist data gaps and assumptions should be acknowledged and the precautionary principle should be applied to avoid negative environmental impacts due to air emissions from the proposed action.

- Burning of vegetation for "management of ground cover" should not be allowed in order to reduce negative impacts to air quality. Vegetative management alternatives and wildfire management plans should be identified and included in the FEIS proposal.

- BECQ requests that DoD coordinate with relevant agencies to provide reports and ensure that where ever possible air emissions are reduced to ensure the proposed action areas remain high quality air attainment zones. Should the proposed activity be conducted, monitoring plans that include funding for adaptive management interventions should be in place before construction or operations commence to assess actual emissions and ensure that air quality of the CNMI is not impermissibly compromised due to these activities. BECQ requests coordination in this iterative planning process and that DoD provide periodic reports of emissions monitoring to DEQ and any other interested agencies or individuals.

Noise

BECQ is concerned that the noise impacts of the CJMT are incompatible with current land uses on Tinian, Pagan, and Saipan. Also, the methods used in the DEIS for calculating conflicts with land use are confusing. In Section 3.5, the DEIS states that noise zones are defined as follows (p.3-50):

Table 3.5-1. Noise Zones and Sensitive Land Use Compatibility

Zone	*Decibel A-weighted / C-weighted / Peak*	*Land Use Compatibility Level*
I	<65 / <62 / <87	Compatible
II	65 to 75 / 62 to 70 / 87 to 104	Normally Incompatible
III	>75 / >70 / >104	Incompatible

Note: *Compatibility refers to sensitive land uses such as homes, schools, hospitals, and places of worship.

However, on the very next page the DEIS states that "Another guideline used by the military for assessing noise generated by large-caliber and explosive munitions is risk of complaints". The DEIS offers the following table (p.3-51)

Table 3.5-3. Large-caliber Weapons and Explosives Risk of Complaints Levels

Risk of Complaints	*Peak Decibel*
Low	< 115
Moderate	115 – 130
High	> 130

It is unclear where this other guideline comes from or why it differs in peak decibels from Table 3.5-1. BECQ requests further clarification on the difference between these two tables and why the military chose a decibel threshold of 115 for complaints rather than 87 (compatible peak noise level, as listed in Table 3.5-1). The CDC warns that potentially hazardous sound levels can begin at 85 dB, and this threshold should be the basis for long-term exposure limits and discussion of significant impacts of noise levels in the EIS. (CDC 2013)

Based on the recommended exposure limits identified in the National Institute for Occupational Safety and Health (NIOSH) Revised Criteria for a Recommended Standard: Occupational Noise Exposure (NIOSH 1998), the table below provides some common sound sources, their corresponding sound intensities (in decibels), and the duration of exposure limits before hearing damage begins.

Table 1: Sound, Sound Intensity, and Recommended Exposure Limits

Safe Sound Level			
Sound Source Examples	**Sound Intensity (Decibels)**	**Recommended Exposure Limits For**	**Comments**

		Repeated Exposures*	
Quietest sound heard by person with normal healthy hearing	0	Any duration	None
Quiet empty classroom that meets U.S. acoustical standard†	35–40	Any duration	None
Typical library sound levels	40	Any duration	None
Typical unoccupied classroom	46	Any duration	None
Normal conversational speech	60	Any duration	None
Battery-powered pencil sharpener	71	Any duration	None
Potentially Hazardous Sound Level			
Sound Source Examples	**Sound Intensity (Decibels)**	**Recommended Exposure Limits For Repeated Exposures***	**Comments**
School cafeteria	85	8 hours	Prolonged exposures might cause slight hearing loss. Hearing protection should be used if regularly exposed to this sound level beyond the exposure limit.‡
Band class	90	2 hours	Hearing protection should be used if regularly exposed to this sound level beyond the exposure limit.‡
Wood or metal shop, power tools, snowmobile	100	15 minutes	Hearing protection should be used if exposed to this sound level beyond the exposure limit.‡
Hazardous Sound Level			
Sound Source Examples	**Sound Intensity (Decibels)**	**Recommended Exposure Limits For Repeated Exposures***	**Comments**
Personal stereo system at high volume	105	5 minutes	Hearing protection should be used if exposed to this sound level beyond the exposure limit.‡
Chainsaw, loud rock concert	110	1.5 minutes	Hearing protection should be used if exposed to this sound level beyond the exposure limit.‡
Ambulance siren	120	9 seconds	Hearing protection should be used if exposed to this sound level beyond the exposure limit.‡

Firecrackers, firearms	140-165	Immediate hearing damage possible	Hearing protection should be used whenever exposed to this sound level.‡

*NIOSH Recommended Exposure Limits (RELs) are based on repeated exposures occurring over a period of years. For example, repeated exposure to 85 decibels during an 8-hour workday over a period of years or repeated exposure to 90 decibels during a 2-hour period over a period of years are potentially hazardous. Hearing damage from noise adds up over time. Single, one-time exposures do not pose an immediate risk of hearing loss unless sound levels equal or exceed 140 decibels.
† American National Standards Institute (ANSI) S12.60 (2002).
‡ Hearing protection devices include earplugs and earmuffs that are made to reduce the loudness of sound. Earplugs are placed in the ear canal so that they totally block the canal, reducing the loudness of sound. Earmuffs fit completely over both ears, fitting tightly to reduce the sound loudness. It is recommended that earplugs and earmuffs be used together when noise exposure is particularly high. Cotton in the ears, winter ear warmers, and audio headphones are not appropriate hearing protection devices.[6]

Tinian

Table 4.5-9 lists points of interest on Tinian that will be affected by peak large-caliber noise levels and Table 4.5-10 lists points of interest on Saipan that could be affected. The cut off rates in these tables are confusing. Why was "<110" decibels chosen as the cut-off for neutral weather conditions? Table 3.5-1 lists 87 decibels as the peak incompatible noise level.

According to the DEIS, Tinian High School and Tinian's Northern Mariana College will typically experience 58 decibels of noise using C-weighted day-night average sound levels. Students typically attend school during the day. BECQ is concerned that the DEIS did not sufficiently communicate what the average noise levels will be during the day, and what these noise levels might mean for sensitive receptors, especially students at nearby schools on Tinian and Saipan.

According to the DEIS, Tinian's Northeast of Marpo Heights (a residential area) and Agingan, Coral Ocean Point Resort, Obyan, Koblerville Elementary School, and San Antonio Elementary School on Saipan will be exposed to at least 115 decibels under unfavorable weather conditions. The DEIS notes that unfavorable weather conditions would occur 2-3 weeks per year (p.4-101). Could the military avoid training during these time periods?

How long will peak large-caliber noise occur and affect Tinian locations, which are closer to military operations and may be less affected by weather conditions? Table 4.5-9 lists Tinian High School, San Jose, San Jose Catholic Church, Tinian Elementary School, and Tinian's Northern Mariana College as experiencing <110 decibels under neutral weather conditions. This is a far cry from the 87 decibels listed as compatible in Table 3.5.-1.

Finally, there is no mention of Alter City's proposed Plumeria resort which would be adjacent to the Military Lease Area. The DEIS should describe noise impacts to the proposed resort and effects to tourism and economic development, especially in regards to this large proposal that has been in development since 2014.

Pagan

The DEIS states that there is no population or noise-sensitive land uses on Pagan. The people of Pagan, however, wish to return to their home island. The CJMT and its noise levels would preclude such an option.

Recommendations

- Clarify why the DEIS is using the chosen thresholds.
- Address noise impacts to resorts on Tinian including Alter City's propose Plumeria resort.
- Avoid noise impacts to schools and residential areas.
- Detail how negative impacts of long-term exposure to noise levels that can cause hearing damage will be avoided, minimized, and mitigated.

Land and Submerged Land Use

This section does not account for planned developments on Tinian and Pagan. In particular, the DEIS does not sufficiently discuss the proposed Alter City development on Tinian (which was leased in September 2014 and includes part of the planned transportation route from the Port), or the resettlement of Pagan. In addition, there is no alternative that is not dependent on the leasing of additional CNMI lands, which is dependent upon the good will of the people of the CNMI and is not guaranteed. If larger land areas are needed to execute the proposed actions, it would appear reasonable for DoD to consider alternatives beyond the CNMI. If the FEIS does not reflect expanded consideration of alternatives, it should at least acknowledge current and foreseeable land uses on Tinian and Pagan. As it stands, it is not clear whether the proposed action is compatible with the existing lease on Tinian, and live-fire training activities are clearly incompatible with proposed homesteading and conservation uses of Pagan and the development of an adjacent resort community on Tinian.

Tinian

- ***Page 3-83:*** This map is sourced from 2010 and 2013, but there have been recent lease agreements that have been signed since 2013 that need to be incorporated into the map (i.e, Alter City). Current land use data should be used when discussing potential impacts to land use.
- ***Page 4-154:*** What public scoping comments were collected, when, and with whom? And what did they say? We are not aware of any "public scoping" being conducted specific to land use plans. BECQ requests that the FEIS provide details when claims regarding public outreach and engagement are made.
- ***Page 4-156:*** Under 4.7.3.1.1.2 the DEIS states that 467 acres of land is only 3% of total land on Tinian. However, not all land is of equal value, and the land that the military is proposing to acquire is prime land close to important public infrastructure that the local community and tourists alike rely heavily upon. How will this affect CPA's ability to manage the port and the airport? Will the military contribute to maintenance due to the higher use and wear on these facilities? How will this acquisition impact the public's ability to use these facilities? These are all potential significant impacts. that should be considered and addressed in the FEIS.
- How will land acquisition and military buildup affect the cultural site and tourist destination of House of Taga? There is absolutely no mention of potential impacts to this significant area. The FEIS should include potential impacts to current sites of cultural and economic importance.
- ***Page 4-158:*** Tourism needs to be listed and addressed here as an existing land use, as it is one of the primary uses of many of the potentially impacted areas on Tinian.

- ***Page 4-158:*** Traditional cultural practices need to be listed and addressed here as an existing land use. The FEIS should consider impacts of the proposed action to cultural practices and traditional uses that take place on much of the potentially impacted area.
- ***Page 4-158:*** Exemplifies one of many places where analysis needs to include Alter City's lease as an "adjacent designated land use".
- ***Page 4-162:*** What about port activities impact to Kammer Beach or the House of Taga? Visual Resources? All direct, indirect, and cumulative impacts should be detailed and efforts to avoid, minimize, and mitigate impacts should be described in the FEIS.
- ***Page 4.162-4:*** Just saying that the actions would be "consistent to the maximum extent practicable" is not satisfactory; the FEIS must explain how and why these actions will have less than significant impacts to submerged land uses, including the criteria and threshold used in coming to this conclusion.

Pagan

- ***Page 4-168:*** 4.7.4.1.3.1. Resettlement of Pagan is a planned land use (not "potential" planned land use) and therefore needs to be discussed and addressed in this section. This also applies to Section 4.7.4.1.3.2 – Public Access, as this proposal will severely limit Public Access in resettlements.
- ***Page 4-169:*** 16 weeks a year of live-training does not constitute a "limited time" and this use should be considered significant unless it can be demonstrated that the submerged lands (and their ecosystems) would be able to appropriately recover after the training has occurred. A use only has to occur once in order for it to be "incompatible" or "significant" if it either completely destroys the affected ecosystem or the ecosystem is slow to recover (ie a coral reef).

Recommendations

- The FEIS should account for planned developments on Tinian (including Alter City's Plumeria Resort) and Pagan (homesteading) and describe what impacts of the proposed action might be to these currently planned land uses.

- The FEIS should include a more detailed analysis on how the military's acquisition of lands will affect tourism, recreation, and cultural practices

- If the DoD is in fact anticipating that "[p]otential future live-fire training could be accommodated up to a total of 45 weeks of training on Tinian and a total of 40 weeks of training on Pagan" (pg. 2-3), anticipated timelines and potential impacts of these expanded activities should at least be acknowledged as potential cumulative or indirect impacts of the proposed action and assessed as such in this environmental assessment.

Recreation

This section does not adequately address the severity of the impact that the proposed military action will have on the current and planned recreational activities (including tourism) on Tinian. BECQ acknowledges that there is limited existing baseline data (p. 4-172), but this data would be easily collected through interviews with tour operators on Tinian, fishermen, and prominent members of the local community. Most tourists who visit Tinian include trips to the attractions in the Military Lease Area, and many of them travel to these sites through tour companies. These tour companies should have some kind of record keeping. Uncovering specific numbers would not be difficult through adequate outreach and stakeholder involvement. There is insufficient discussion of the impacts that the construction, resulting closure of Broadway, and future training plans would have on the access to Blow Hole, a popular and unique tourist attraction. There is no discussion of how the sporadic closure of 4 of the 5 dive sites will affect the dive tourism industry, regarding both Tinian dive shops and Saipan dive shops (who travel by boat to these dive sites). In addition, there is no mention of the impact that the proposed activities will have on the subsistence fishing practices of the local community. Many community members rely on fishing for a cheap and healthy protein, or to subsidize their income through sales. The impact that the closure or modification of key fishing locations will have on this fishing lifestyle is not discussed anywhere in the DEIS. And finally, there is no mention of how these proposed activities will impact the planned Alter City Group development. All of these issues, and others, need to be addressed in the FEIS in order to fulfill the NEPA process and for BECQ to develop an adequate response regarding DoD's assessment of impacts and efforts to avoid, minimize, and mitigate these impacts.

Tinian

- ***Page 4-172:*** BECQ requests more information about the "agency and stakeholder interviews" and the "commercial recreation and tour operators' interviews". Who was interviewed? When? What was asked?
    - CNMI agencies do collect data regarding number of tourists to Tinian, and most tourists travel to northern recreational areas via tour operators. It would be relatively easy to get an idea of number of tourist visits to the northern parts of the island by speaking with tour operators, bus drivers, or even the rental car/scooter companies. This information should be included in discussion of impacts to recreation in the FEIS.
- ***Page 4-174:*** What does "temporary" mean? This language is vague and broad. BECQ requests more specifics on when and how often the port and main roads will be congested with military construction activities in order to support meaningful analysis of the impacts of this proposed action to existing and planned recreational activities.

- ***Page 4-175:*** The DEIS says that Unai Chulu will only be closed for construction for up to 8 months and therefore the impact is less than significant. How will the final structure impact tourists and recreational users of the beach? How will the impacts of the training activities impact the aesthetic appeal of the beach? Further, how will water quality issues as outlined in the Water Resources section of these comments affect recreation at beaches? This beach is visited by tourists seeking idyllic photography moments and pristine scenery. This will not be available to them should the land ramp be visible from the shore or the surrounding vegetation be trampled or destroyed. These are significant long-term impacts. Additionally, the closure of a popular recreational beach for ¾ of a year can also be said to have significant impacts to recreation – how was this impact determined to be less than significant? The FEIS should detail the direct, indirect, and cumulative impacts of the proposed action as well as provide information about how the proposed action plans to avoid, minimize, and mitigate these impacts.
- ***Page 4-175:*** Public access will be granted during a few daylight hours even during training exercises, but there is no discussion of what the quality of that access would be. No one wants to go visit a pristine, idyllic beach only to hear live fire in the background. Noise or other impacts could effectively close the public access even if it is technically open. The FEIS should address quality of access in addition to providing more details about how and when the DoD plans to allow access passed the newly fenced perimeter.
- ***Page 4-175:*** Again, define "advance" for advance notice – what does this mean, what process would be in place to obtain access, and what kind of burden would this requirement place on local and out-of-town recreational users and the agencies and government offices that support and encourage these uses? The FEIS should detail the direct, indirect, and cumulative impacts of the proposed action as well as provide information about how the proposed action plans to avoid, minimize, and mitigate these impacts.
- ***Page 4-175:*** Would the ranchers always be able to access their cattle leased areas? Details of proposed cattle grazing plans should be included to support meaningful assessment of impacts and proposed efforts to minimize and mitigate impacts.
- ***Page 4-175:*** BECQ is concerned about the proposed destruction of the Hinode American Memorial and the Shinto Shrine and this impact to tourism (especially annual WWII events). These sites are place-based historic tourist attractions. The FEIS should detail the direct, indirect, and cumulative impacts of the proposed action as well as provide information about how the proposed action plans to avoid, minimize, and mitigate these impacts.
- ***Page 4-176:*** "In as much as possible" is unacceptably ambiguous, and, in terms of important recreational and cultural uses, is flatly not acceptable. The military MUST schedule training around peak tourist holidays (including foreign holidays such as Golden Week), anniversaries, and local festivals, and limit training activities during peak tourist

visitation months (December – March, July & August) in order to accommodate significant existing recreational and tourist uses.

  - "It is likely" is also not acceptable. BECQ cannot assess the impacts of a proposed action if the EIS is not clear about what specifically the action will entail. The FEIS should remove such ambiguities in order to support meaningful analysis of impact and proposed avoidance measures.

- ***Page 4-176:*** The mitigation regarding impacts to the Shinto Shrine and Hinode American Memorial need to be included in the FEIS before there can be meaningful analysis in this section.
- ***Page 4-176-177:*** Why was Unai Chiget left off of the list of beaches, but included in Section 3.8 analysis? Any and all impacts should be discussed in this assessment.
- ***Page 4-177:*** Mitigation measures after amphibious landing trainings include restoration of beach topography, but there is no mention here or elsewhere of the impact to or mitigation of the nearby vegetation. All four beaches that are proposed to be included in training activities have heavy vegetation leading up to the beaches. Unai Masalok also has cultural sites located nearby. Information about impacts to the areas adjacent to the beach trainings needs to be included here and elsewhere.
- ***Page 4-174:*** The closure of four popular dive and snorkel sites will heavily impact the bottom line of dive operators on Tinian and on Saipan, potentially putting some out of business. This needs to be addressed here and elsewhere in the DEIS. The DEIS does not list which dive sites will be closed (simply stating "four of the five") we assume the following sites will be closed: Fleming, Dump Coke, Tinian Grotto, Tatsumi Reef
  - This is particularly true if the training activity occurs during peak times (March-June), which is when these sites are most often accessible due to favorable weather/wave conditions.
- ***Page 4-178:*** Two Corals may also be used by guests at the new Alter City Group development, further increasing use, overcrowding, and ecological impact. The cumulative impacts combined with Alter City Group's proposal needs to be addressed here.
  - How does the DEIS define the "capacity" of a snorkel site, and how did the DEIS come up with the theory that sending divers and snorkelers from 4 other sites all to one wouldn't exceed capacity? Please explain the methods that went into that assessment.
- ***Page 4-178:*** There is no mention here or in Section 4-15 of subsistence spear fishing. There is little to no commercial fishing, but quite a lot of subsistence fishing which relies heavily on the access points along the northwestern coast of Tinian. Many of these are only accessible for about four months out of the year (March through June) and therefore any closings in this time would all but eliminate these fishermen's ability to fish here. The effects of the ramp at Unai Chulu and the runoff and other water quality issues from training activities could also impact ecosystem health, thereby depleting or even

eliminating crucial fish populations (see marine biology section). An examination of the impact that limiting fishing access to this access point will have on the community who relies on fish as their main source of protein must be done.

- ***Page 4-176-9:*** There is considerably more tourism in this area than this section lets on. There are over 50,000 visitors to Tinian each year (p.3-95) and most of them visit the beaches and sites up north. This number is expected to grow. There are many tour operators which bring busloads of tourists to the various sites. Four wheel drive (4WD) or all-terrain vehicles (ATV) tours visit Unai Masalok, Unai Dankulo, and Blow Hole. There needs to be a more thorough evaluation of tourism and how eliminating or modifying these areas will impact it.
    - The Blow Hole is "one of the most recognized and visited sites on the island of Tinian", and yet there is minimal discussion of the site, access to it, and the visual impacts of nearby training activities. This needs to be discussed further
- ***Page 4-180:*** There is no discussion of noise impacts to planned recreational activities south to the area leased by Alter City Group.
- ***Page 4-180:*** There are some other boating or fishing locations along the southern point of Tinian, but most of the prime diving/fishing spots are in the north. Therefore these training-related closures will result in the loss of prime recreational areas for about half of the year. This is a significant impact, not a less than significant impact as stated.
- ***Page 4-180***: The closure of Broadway and the reliance on 8th Avenue would be dependent on the repair and continued maintenance of 8th Avenue, as right now it is hardly passable by most vehicles. Potential impacts of this proposition should also be assessed considering the location and planned road improvements of Alter City's Plumeria Resort.
- ***Page 4-180***: There is no discussion of what the permanent closure of Broadway would mean for access to Blow Hole, "one of the most recognized and visited sites on the island of Tinian". This needs to be addressed.

Pagan

- ***Page 4-185***: All Pagan assessments are based on the erroneous assumption that there are no planned settlements or activities on Pagan. There are plans to resettle Pagan, and how the military plans will affect the resettlement (and associated recreational activities) needs to be addressed.

Recommendations (Tinian)

- The FEIS should better explain how Construction impacts are "Not applicable" or 'Less than Significant" (p.4-550) to Recreation. Roadway and Access Improvements are currently listed as "BI/LSI". BECQ argues that access restrictions will be a Significant Impact.

- ***Page 4-172***: There will be "indirect impacts to…recreational resources located outside of the Military Lease Area". Many of these recreational areas (Kammer Beach, Taga Beach, etc.) are in disrepair and the local government does not have the resources to fix and maintain the areas. Since tourists will be forced to crowd these areas, the military can help mitigate this impact by providing the CNMI and Tinian government with the resources (monetary and/or personnel) necessary to enhance these recreational areas and maintain them appropriately for the duration of the CJMT.

- "Advanced notice" about training activity and related closures needs to be advanced enough to allow potential visitors to alter plans to work around the closures. And these closures need to avoid peak tourism seasons (and peak tourism weeks, i.e. Golden Week). DoD's plans to ensure access should be detailed sufficiently to allow for meaningful analysis in the FEIS.

- Given the extensive restrictions to tourist attractions and dive sites associated with the proposed action, DoD should work with Tinian Dynasty and other tour operators to recommend alternate locations to tourists. Perhaps the military can help establish Unai Dankulo as a tourist destination that is accessible via a paved and maintained road, with amenities, a parking area (that will prevent visitors from driving on the beach), and a maintained informational nature trail to the latte stone sites back in the jungle.

Terrestrial Biology

BECQ is concerned that the level of research and description put into the Terrestrial Biology chapter of the DEIS is insufficient support meaningful analysis as required by NEPA. Little effort has gone into demonstrating the comprehensive impacts of military activities. Indirect impacts are not fully explored and synergistic impacts are not even discussed. Although erosion is mentioned, sedimentation is not discussed along with the synergistic impact of sedimentation and physical damage to coral reefs. When significant impacts are determined, there is little explanation as to how these impacts will be appropriately mitigated, especially the take of fruit bats and loss of native limestone forest.

Tinian

Tinian Military Retention Land for Wildlife Conservation

Under the current proposal, the Tinian Military Retention Land for Wildlife Conservation would be removed and replaced. This 936 acre conservation area was established in 1999 to protect the Tinian Monarch, which is currently under petition for relisting as an endangered species. The DEIS currently states that it "*may* (italics added) replace the current Tinian Military Retention Land for Wildlife Conservation by establishing a conservation area(s) for the protection of the Tinian monarch and other wildlife species" (p.4-240). "May" is not sufficient – DOD must mitigate the removal of the conservation area. BECQ is also concerned that the DOD is too willing to move conservation areas – will new conservation areas also be moved after 15 years?

International Broadcasting Bureau

BECQ is concerned about the relocation of the International Broadcasting Bureau (IBB - as outlined further in the "Programmatic Analysis of Future Potential Project Components" section of these comments). The DEIS currently states that the IBB could be moved to the Sabana Conservation Area on Rota or to the Marpi area on Saipan. Both of these areas offer habitat for endangered birds. As Alternative 2 is the preferred alternative of the DoD (and involves moving the IBB), a more thorough analysis of the effects of moving the IBB must be performed.

Vegetation Communities

The CJMT plans to remove at least 1,728 acres (Alternative 1) of vegetation covering 8% of Tinian's area. The DoD plans to mitigate the loss of this vegetation by implementing forest enhancements on a minimum of 6.3 acres of mixed introduced forest (p.4-197). It is unclear what criteria will be used to select the site and plants for the forest enhancement plan. Although spatial considerations are, somewhat, addressed by this plan, it is unclear whether temporal

considerations are also taken into account. It may take time for plants used for forest enhancement to become ecological contributors to the system. Mitigation should take into account any time lags that may exist. Loss of the existing mitigation area would require additional mitigation. Finally, although vegetation can recover quickly, BECQ is concerned about the quality of vegetation that will recover – BECQ would prefer to see already successfully established conserved natural areas to mitigated areas that may or may not perform the same habitat function, and would require substantial monitoring and maintenance to ensure establishment of native plants over invasive species. Mitigation plans are not sufficiently detailed to support meaningful analysis in the DEIS.

Unique Nature of Island Biogeography

BECQ is concerned that the DEIS does not take into account the small land mass and particular island ecology is the CNMI. Given the small land mass of the entire CNMI, even relatively small land disturbances have a large impact. Impacts in the CNMI are much more severe due to the small populations of endemic species, the accumulation of past impacts, and the susceptibility to natural disturbances such as typhoons.

Watershed Processes

It is important to note that the watersheds of the Marianas are highly conductive, what happens on the terrestrial end often has an effect on the marine environment and vice versa. Sedimentation on reefs due to terrestrial erosion is a well-known process (Fabricius 2005, Rogers 1990); however shore line erosion that results from the destruction of the reef crest (i.e. Unai Chulu) is not as well documented, but should be considered. These and other watershed processes are poorly represented in the DEIS.

Wildlife and Special Status Species

The DEIS outlines numerous effects to CNMI wildlife, including endangered species. BECQ is concerned that the DEIS underplays the effects that the CJMT will have to the long-term health of wildlife in the CNMI. The DEIS currently acknowledges that there would be Significant Impacts from construction but states that there would be Less than Significant Impacts from Operations. BECQ is concerned that there will be Significant Impacts to Native Wildlife and Special-status Species from both construction and operations. Further, the DEIS is unclear in its use of the words ‘short-term’ and ‘infrequent’, or what the threshold is for affecting wildlife.

Page 4-209: While wildlife may react to military personnel moving through forest or other habitats, these reactions are expected to be insignificant as land training within the Military Lease Area would be short-term, infrequent, diffuse and vary in location

The DEIS should explain how long activities will occur and to what extent activities will impact wildlife and habitat.

BECQ is also concerned about takings of species that are locally managed such as the coconut crab. Although species such as the coconut crab are not considered endangered or threatened, they are locally managed, and take is limited by season and bag limit. How does the military plan to compensate the CNMI, when such species are taken out of season or the take is in excess of the bag limit? Permits are also required. Will the military secure permits for the unintentional take of these managed species?

Mariana fruit bat

The DEIS says the following about the Mariana fruit bat:

Page 4-201: due to historic hunting pressure on the species and limited suitable habitat, the Mariana fruit bat no longer regularly occurs on Tinian

The decline of the Mariana fruit bat is not a reason to add additional environmental pressures. If anything, conservation measures should be ramped up to encourage the return of the fruit bat. Mitigation measures should be implemented to protect fruit bat habitat.

Sea Turtles

The DEIS describes impacts to sea turtles, saying "it is assumed that construction at Unai Chulu would result in the loss of one turtle nesting season on this beach, as turtles would likely avoid the construction equipment and human activity." (p.4-205) It is unclear whether sea turtles would in fact avoid Unai Chulu during construction, or whether they would be harmed while traveling to Unai Chulu. If sea turtles do learn to avoid Unai Chulu during construction, is it guaranteed that they will return? Is there a plan if sea turtles do not react as expected by the DOD?

Birds

BECQ is concerned that there will be noise impacts that could disturb endangered birds such as the Mariana moorhen.

The DEIS is inconsistent when addressing the response of animals to military activity. In the DEIS, animals seem to respond to the convenience of the military so as to show no significant impact. According to the DEIS animals always runaway if further detrimental impacts will occur if they stay (i.e. fish will runaway with soft start protocols), however they will not run away, if running away will result in detrimental impacts to the population (birds will not run away from their nest when exposed to noise from military activity).

The DEIS claims that birds habituate to military noise and thus there will be Less Than Significant Impacts to birds from Operations. The DEIS quotes a study on the red-cockaded woodpecker as evidence (p.4-212). However, different birds may react differently to military noises. The DEIS does note that "No noise studies have been conducted specifically on wildlife

species present on Tinian" (p.4-210). The military should consider the birds on Tinian (and Pagan) to be significantly impacted until they can reasonably prove otherwise.

Page 4-206: There would be no impacts to coastal or grassland habitats used by seabird or shorebird species.

The DEIS does not state any data to support this statement. Could the boat ramp at Unai Chulu impact coastal habitat? Or moving the IBB? The DEIS states that of the 44 native bird species on Tinian, 39 are protected by the Migratory Bird Treaty Act. Yet, only three species are highlighted in Table 4.9-3.

Wetlands

BECQ is also concerned about habitat loss and the destruction of wetlands on Tinian. Wetland conditions were not assessed and the Wetlands APC management criteria were not applied on Pagan, despite the fact that the lakes there and their boundaries are believed to meet both federal jurisdictional and local wetlands criteria. The actual ecological importance of these areas should be detailed in order to support meaningful assessment of impacts and discussion of potential efforts to avoid, minimize, and mitigate impacts of the proposed actions

The Survey Report only assessed a small number of the wetland areas identified in the USFWS' National Wetlands Inventory in the Mahalang Complex (Sites MC1, MC2, MD3, M07, M10, and M11), and topographic and land cover data indicate these areas are likely more extensive, connected, and ecologically valuable than indicated in the survey report. In several instances the survey data sheets note in cases that hydric soils likely extend beyond two soil pits dug at each of the Mahalang Complex sites or do not provide complete data on the assessment form. For example:

- M07 does not indicate presence of hydric soils in summary despite identifying hydric soils in report;
- M04 #2 states soil is not hydric but states in remarks soil types are "difficult to determine – it is likely if soil is tested further downslope when water level is lower that hydric soil will be located" – a statement indicating that additional site visits should have been conducted and/or soil pits should have been dug in order to determine presence or absence of hydric soils;
- M10 #1 states "hydric soil likely present downslope" but finds no hydric soils present;
- M2 M11 #1 found "thin organic layers" and concretions but still concluded no hydric soils were present, despite indications that this was likely a disturbed or problematic site;
- MD 3 / M20 #2 found no wetland traits present, despite remarks that soil pits were dug "too far upslope to avoid flooded area" – if this area was flooded, wetland hydrology

should have been reported and a follow-up assessment and/or other soil pits should been conducted to verify current conditions and classify this area.

Data sheets contained similar inconsistencies for the Bateha Complex:

- BD 1 #2 summary of findings incomplete, despite noting presence of wetland hydrology including high water table in observations of hydrology indicators;
- BD 1 #3 summary findings indicated no hydric soils present, despite remarks that "test pit quickly filled to 15" and rising during survey – it is likely that hydric soils occur a bit downslope or deeper than water during dry conditions";
- BD 2 #3 indicated a "?" under presence of hydric soils in the summary of findings, noting that "water table encountered at 8'' – redox features evident below surface; red and few dark concretions" – features that would likely support the classification of these soils as "hydric".

It is also worth noting that all six site assessments conducted for Lake Hagoi and associated wetlands were conducted on a line transect paralleling the west side of the elevated Hagoi Road. All of these soil pits were dug at sites described as "upland" and thus, no meaningful analysis was conducted relating to Lake Hagoi regarding its extent or current ecological conditions.

BECQ requests that DoD conduct full delineations of the Hagoi, Bateha, and Mahalang sites, applying USFWS and CNMI's Public Lands definition of wetlands in order to establish (1) the extent of these wetlands; (2) their current ecological condition; and (3) assessment of possible impacts to these systems regarding the proposed actions in order to inform a discussion of avoidance, minimization, and mitigation of these impacts as required by NEPA. The FEIS should include data-supported delineations of the wetlands and lakes on Tinian.

Lacking Data – Copies of Data Referenced in Appendix L Requested

Where possible, proponents of a NEPA action are expected to provide the materials they reference to reviewing agencies and the public. While some of the cited materials in Appendix L are publically available, having to track down all of these resources is burdensome to reviewing agencies and the public. To remedy this burden, BECQ requests all resources and maps used to support the surveys conducted on Tinian as well as related analysis regarding terrestrial resources for Pagan and Tinian. BECQ requests that DoD provide any and all sources including LiDAR databases and layers used to assess current conditions in Chapter 4. Any and all references listed in Appendix that are not digitally available should be provided in order to support comprehensive agency review of impacts and mitigation discussions.

Pagan

Vegetation

The removal of ungulates is likely to increase vegetation on Pagan, but an increase of undesirable grass species may occur. Grass is the primary feed for cows. An increase in grasses may outcompete more desirable vegetation; and increase a fuel source for wild fires, ultimately leading to more deforested lands. Additionally removal of ungulates may have a negative impact on the socioeconomics and culture of Pagan residence. People that live on Pagan depend on these animals for food and use bones and horns to make necklaces. Mitigation Measures with more overarching benefits should be considered such as the eradication or control of rats.

BECQ acknowledges the benefits of feral ungulate removal, but this may have an adverse impact on the socio-economics of the people inhabiting Pagan. Removal of pests such as rats that can result in conservation and socio-economic benefits maybe more appropriate.

Wildlife

BECQ is concerned that operations on Pagan could lead to habitat loss and disturbances (noise, take from munitions) that will affect endangered or threatened species including the Mariana fruit bat, Mariana moorhen, and the Micronesian megapode.

The Mariana fruit bat is declining in numbers rangewide but occurs in high numbers on Pagan. Impacts due to habitat loss, disturbance, or direct takings could harm the population health of this species.

Although the Mariana moorhen does not occur in great numbers in Pagan anymore, wetland habitat still exists. Habitat should be protected for future populations of this species.

Pagan Lakes – Assessment Needed

BECQ requests that DoD conduct full delineations of the two lakes as well as any and all drainage or ponding areas identified on Pagan, applying CNMI's Public Lands definition of wetlands in order to establish (1) the extent of these wetlands; (2) their current ecological condition; and (3) assessment of possible impacts to these systems regarding the proposed actions in order to inform a discussion of avoidance, minimization, and mitigation of these impacts as required by NEPA. The FEIS should include data-supported delineations of the lakes as well as any ephemeral streams on Pagan.

Recommendation

- Tables 4.20-1 and 4.20-2 should be modified to show Significant Impacts under all Terrestrial Biology categories including Operations for Vegetation Communities, Native Wildlife, and Special-status Species.
- If impacts to the Mariana fruit bat, Mariana moorhen, and the Micronesian megapode cannot be avoided, then impacts should be mitigated. Mitigation discussions should occur with BECQ and other agencies in the CNMI.
- DoD should delineate wetland area and conditions on Tinian and Pagan and provide this data in reports and GIS layers in the FEIS.

Marine Biology

On the whole, BECQ is concerned that there are noticeable errors, data gaps and inaccurate statements within the Marine Biology chapter of the DEIS. First and foremost, reviewers found the text within the EIS to be poorly referenced, making fact checking and further research difficult. Various sections of the EIS either use outdated references or reference the appendices, rather than putting the direct reference in the text. Secondly, the draft EIS does a poor job of listing the pertinent local laws and regulations the Military would have to adhere to. Lastly, the draft EIS presents a few options for mitigation that are vague and non-committal. While it may be hard to determine what the most appropriate option is, there are options that should be a required minimum step towards compensatory mitigation.

Unai Chulu Construction

BECQ is very concerned about the proposed construction of a boat ramp at Unai Chulu which the military claims will have direct effects to 10.3 acres of coral and indirect effects to an additional 10.3 acres (Table 4.10-1). BECQ is concerned that the DEIS misrepresents the significance of dredging and construction at Unai Chulu, and under-represents the damage that could occur.

The DEIS states, "The size of the area exposed to indirect effects of mobile rubble (outside of the direct physical disturbance footprint), is conservatively estimated to be equal to the area exposed to direct effects. The shape of the indirectly affected area cannot be quantitatively estimated." (p. 4-274)First, the DEIS only addresses "mobile rubble" here, excluding sediments, fill gravel, and other dredged material as potential sources of indirect impacts during the construction phase. Second, and more importantly, an area equal to the area exposed to direct physical effects is likely a gross underestimate of the area that will be indirectly impacted by turbidity, sediments, rubble, and other construction debris. Sediment and turbidity plumes from dredging and construction activities often get transported many kilometers away from the construction site by tidal and other currents (e.g. Islam et al 2007; Erftemeijer et al. 2012). Furthermore, given the steep slope of the reef offshore of the construction zone, rubble, gravel, and some sediments will likely travel far down slope, abrading, breaking, and smothering corals and other benthic flora and fauna along the way.

Although the DEIS addresses mobile rubble created from construction, it is unclear what the DOD plans to do to limit damage caused by mobile rubble. How will rubble be contained down slope and what will be done with rubble once it is contained? It is also unclear how sediment will affect the reefs. The DEIS states that *"Turbidity would be briefly and locally increased, but suspended sediments would either settle or be rapidly dispersed, with no long-term effects on photosynthesis"* (p. 4-274) BECQ questions whether turbidity will in fact be brief (and how long is brief?) when taking into account re-suspension of sediments. BECQ requests a better explanation on the transport model used for sediment plumes. The DOD should be required to

develop a sediment transport model for Unai Chulu. Such a model would provide a better estimate of the area that would potentially be exposed to secondary impacts from construction generated turbidity, sediments, and rubble and will aid in the development of effective containment and other mitigation strategies.

The DEIS says that "physical disturbance at Unai Chulu during construction represents 0.34% of the total reef habitat on Tinian" (p.4-275). The constant repetition of this 0.34% statistic (at least 10 times throughout the marine biology chapter) is misleading and seems to be an attempt to play down the impacts of the military activities on coral reefs and associated habitats and fisheries resources. The number is misleading because it is based on the total area of reef habitat from 0-98 feet (0-30 meters). The DEIS does not adequately address the fact that there are distinct reef zones (i.e. reef flat, reef crest, shallow fore reef slope, etc.) within this 0-98 foot depth range, each with distinct biological assemblages, ecological and physical properties, and economic and cultural importance. While the area that will be directly impacted by the construction at Unai Chulu may represent 0.34% of the total reef habitat, it represents a much higher percentage (~31% , p 4-267) of reef flat habitat on Tinian. Many ecologically, economically, and culturally important organisms obligately inhabit reef flat and/or shallow reef areas for part or all of their lives. A few examples are spiny lobsters, the threatened coral species *Acropora globiceps* and *A. retusa*, the scribbled rabbitfish (*Siganus spinus* or Sesyon), and the blue-banded surgeonfish (*Acanthaster lineautus* or Hiyok). The proposed military activities would significantly impact populations of these species on Tinian and would therefore have a negative impact on commercial and sustenance fishing, recreation, and tourism. Furthermore, a recent larval connectivity study for the Marianas Archipelago (Kendal and Poti, 2015) indicates that Tinian is an important source of marine larvae for other islands in the CNMI, suggesting that degradation of Tinian reefs may ultimately have a much broader impact on coral reef communities across the archipelago.

The DEIS states that *"proposed construction operations would not be in deep water but would occur in the shallow intertidal environment of Unai Chulu (approximately 5.0 to 20 feet [1.5 to 6.0 meters])."*(p.4-276) BECQ asserts that 20 feet is not the intertidal environment, it represents a distinct subtidal habitat and it is a prime spear-fishing depth. The DEIS should review its habitat designations, keeping in mind species that use those habitats and the socio-economic and cultural uses of those habitats.

Additionally, construction generated debris, rubble, and sediment will likely travel even farther down-slope to waters below 20ft. However, the marine surveys conducted by the DOD only extended to a depth of 12 feet, making it impossible based on the information provided in the DEIS to assess the potential damage to coral reef and fish habitat and special status coral species. The DEIS states that "*Pile driving activities at Tinian would occur during the daytime, and the effects would occur for a maximum of 105 days"* (p.4-275). Has the Military taken into

consideration the coral spawning during the days in which construction can occur? CNMI Earthmoving & Erosion Control and Water Quality regulations prohibit all dredging activities from happening 30 days before, 10 days during, and 30 days after the summertime coral spawning event.

The DEIS states that during pile driving activities, "*the potential for injury due to peak sound pressure level would exist within 30 feet (9 meters), and the sound exposure level thresholds for injury to small and large fish would only be exceeded for fish that remain exposed within distances of 1,715 feet (523 meters) and 928 feet (283 meters), respectively, for the entire 600 pile strikes. It is considered unlikely that fish would remain within these distances where injuries could occur*." (p. 4-279) A substantial number of fish might be impacted within 982-1,715 feet of the pile driver as many small reef-associated fish have high site fidelity and swim down to hide in reef structure when threatened. Furthermore, those that do flee will be at greater risk of mortality due to predation. (AASHTO 2008)

The DEIS states that construction at Unai Chulu will have Less than Significant Impacts on populations of fish and non-coral invertebrates. However, quantitative surveys on fish and non-coral invertebrate populations in the construction zone were not conducted and habitat-species relationships were not considered. BECQ argues that populations of non-coral invertebrates and fish that must inhabit reef flat areas for all or part of their cycle will be significantly impacted by construction at Unai Chulu. Overall, further research is needed to assess the potential impacts on fish and non-coral invertebrates in the construction zone.

It is also unclear how the distances and times to mitigate the impact of construction on marine mammals, sea turtles, and fish were determined.

If the construction at Unai Chulu goes forward (and BECQ recommends that it does not), mitigation is absolutely necessary. The DEIS currently says that it "may consider" transplantation of coral species and debris removal (p.4-300). Mitigation must be in-kind and provide habitat for corals and coral dependent species. DOD should include BECQ and other CNMI agencies in discussions on mitigation.

Operations

LCACs and AAVs

The DEIS currently says there will be Less than Significant Impacts from Operations, BECQ disagrees. Amphibious Assault Vehicles (AAVs) will be used at Unai Chulu, Landing Craft Air Cushion (LCAC) vessels will be used at Unai Babui, Unai Masalok, and Unai Lam Lam. AAVs and LCACs would also be used on the beaches of Pagan.

The DEIS states that operations will directly and indirectly impact 0.44% of total reef habitat from Tinian. The DEIS goes on to state, "Based on the low percentage of marine habitat loss in comparison to the total available marine habitat around Tinian, Tinian Alternative 1 operations would result in less than significant impacts to marine habitat and Essential Fish Habitat." (p. 4-292) For the same reasons listed above, this 0.44% statistic is misleading and leads to an underestimate of impacts on marine habitat and Essential Fish Habitat. 0.44 % of total reef habitat represents an additional ~40% of reef flat and reef crest habitats that will be negatively impacted by military operations. Overall approximately 70% of reef flat and reef crest habitat will be negatively impacted by proposed military activities.

The DEIS states that "Landing Craft Air Cushion vessels landings would affect coral colonies and coral reef habitat where habitat occurs within the set-down circle(s)" (p. 4-289). Considering what would be happening is *training* where troops are *learning* what to do – is it possible that LCACs would contact corals outside the set down circles?

The DEIS does not detail how LCACs or AAVs would affect corals during operations. BECQ imagines driving an LCAC over a reef would be similar to sandblasting it, which would cause significant impacts. Re-suspension of sediments and increased turbidity could also occur as a result of operations. More information on how LCACs and AAVs will affect corals and habitat during operations is requested.

Overall, BECQ believes that the DEIS underestimates the impacts of operations on marine invertebrates (corals) and marine habitat/essential fish habitat (coral reefs) on both Tinian and Pagan and recommends designating operations at all beaches with LCAC or AAV activity as having Significant Impacts to these resources from Operations. Additionally, given that ~70% of reef flat habitat on Tinian will be negatively impacted, BECQ believes that Operations will have significant impacts on Fish and non-coral marine invertebrates in these areas

Marine Flora

The DEIS states that marine algae only occurs down to 30 m (p.3-146), however, marine algae can occur anywhere in the photic zone (Littler 1985) and are often found on mesophotic (30-150m) coral reefs (Kahng et al. 2009). This is just one example of the factual inaccuracies that are common throughout the document.

As the DEIS does not provide enough detail regarding the impacts of rubble and sedimentation, BECQ is concerned that there will be Significant Impacts to marine flora during construction and operations on Tinian and Pagan. The DEIS again uses the false statistic of 0.34% saying "marine flora are abundant in Tinian waters, and in-water construction at Unai Chulu would eliminate approximately 0.34% of Tinian's reef habitat that could support marine flora. Therefore, Tinian Alternative 1 construction activities would result in less than significant impacts to marine flora."

(p.4-277). BECQ again argues, that these actions impact a large percentage of Unai Chulu which offers a unique habitat. Comparing impacts to all of Tinian is misleading.

The DEIS states that "*The periodic training activities would temporarily disturb and alter the seafloor, water quality, and physical environment, but most of the seafloor in the training areas is sand and cobble, thus lacking in marine flora*." (p. 4-303) This is not true. Cobble is prime substrate for seasonal gooey algae such as *Liagora* sp. and *Acrosymphyton* sp. Due to their seasonality these species have to find new substrate to settle on every year. Cobbles often move and are abraded clean during typhoon season (July - January) making them prime substrate for spring annual algae such as *Liagora*, *Acrosymphyton*, and *Trichogloea*.

Coral reef habitat, essential fish habitat and Marine Invertebrates (Coral)

In addition to the effects from construction and operations outlined above, BECQ has the following concerns.

BECQ is extremely concerned that the coral reef surveys conducted for the DEIS only extended to a depth of 12 ft. Both construction and operational activities could impact corals, coral reef habitat, and essential fish habitat to depths below 12 ft. The information provide in the DEIS is therefore inadequate to assess the potential negative impacts of the proposed military actions on these resources.

BECQ is concerned about the DOD's definition of corals.

3.10.1.3 Marine Invertebrates (p. 3-147)
"*Corals are marine invertebrates in the class Anthozoa of the phylum Cnidaria that live individually or in colonies. Fire corals are not technically corals since they are part of the class Hydrozoa; however, fire corals are colonial marine organisms that look like true corals and are included in this discussion (DoN 2013a). Major groups of corals in the region of influence include:*

- *Stony corals (*Scleractinia*)*
- *Black and wire corals (*Antipatharia*)*
- *Soft corals (*Alcyonacea, *synonymous with horny corals and sea fans [*Gorgonacea*] and blue corals [*Helioporacea*])"*

The definition for coral is presented confusingly. It is false to say that "*The term "coral reef" refers to any reef, bank, or shoal comprised mostly of corals"* – many coral reefs have less than 20% live coral cover. Some reefs are dominated by crustose coralline algae (CCA) or macroalgae. A lack of coral or a small amount of coral on a structure that was made by corals still makes it a reef.

Marine Invertebrates (Non-coral)

The DEIS states that construction at Unai Chulu *"would result in permanent impacts to larval spiny lobsters, but juvenile and adult spiny lobsters in the immediate vicinity of the construction would be expected to move to more suitable foraging areas."* (p. 4-275). Juvenile spiny lobsters require protected environments including algal beds and reef flat areas to avoid predation and are unlikely to be able to move to more suitable habitats during construction. Adult spiny lobsters shelter in caves and crevices in the reef framework during the day to avoid predation and have extremely high site fidelity (Frisch 2007). Lobsters of any ontogenetic stage are therefore unlikely to move from their protective dens during construction. Those that do attempt to move will be subject to high rates of predation. Therefore, most juvenile and adult lobsters that are present in the construction zone will likely be killed as a result of construction. Construction will also result in permanent removal of essential juvenile and adult lobster habitat.

The DEIS also states that "*although sea cucumbers would be less affected because they burrow and feed on detritus in the sediments rather than living on the reef*." (p.4-293) This is not true, only a few sea cucumbers burrow, and some sea cucumbers live on the reef. The FEIS should reflect best available science when assessing potential impacts and when discussing avoidance, minimization, and mitigation of impacts of impacts the proposed action.

Fish

The loss of habitat will have a profound impact on the fish that depend on reef flat and reef crest areas for survival. The DEIS currently claims Less Than Significant Impacts to Fish from Construction and Operations.

The DEIS states that "Because many individual fish depend on specific coral habitats for survival, mortality would likely occur in these areas. Given the loss of approximately 0.34% of Tinian reef habitat during construction at Unai Chulu, a roughly equivalent reduction in populations of reef-associated fish can be anticipated." (p.4-278). BECQ reasserts that this is a false statistic as 31% of Tinian's reef flat will be impacted by construction and an additional 40% will be impacted by operations. That is up to 70% of Tinian's reef flat fish, which BECQ considers to be a Significant Impact. Again, the DEIS should taken into account the particulars of different reef habitats.

Noise from construction and operations could also impact fish. The DEIS argues that it will use a 'soft- start procedure' (p.4-279) to warn fish and encourage them to disperse, to avoid injury from noise. Fish either runaway or hide on a hole when threatened. The soft start procedure may work for fish that runaway, but the eventual pile strikes may kill those that hide in holes. It is unclear whether the soft-start procedure is a proven method to scare away fish.

Special Status Corals

While BECQ agrees that there will be Significant Impacts to special status corals from Construction and Operations, a recent larval connectivity study for the Marianas Archipelago (Kendal and Poti, 2015) indicates that Tinian is an important source of marine larvae for other islands in the CNMI, suggesting that degradation of Tinian reefs may ultimately have an even broader impact on these coral population and corals reef communities across the archipelago.

It is unclear what mitigation will occur to protect these corals. Will there be a coral expert on staff to mark these difficult to ID species? Avoidance of marked corals does not seem conducive to realistic training what happens if they get hit and smashed?

The DEIS states, "At the level of the individual coral, the consequences of physical strike by heavy equipment would be functionally equivalent to the consequences of physical strike by a **swimmer's boot**." (p. 4-295, emphasis added).This statement is fundamentally untrue. Heavy equipment would likely crush or pulverize an individual coral, whereas damage from a swimmer's boot could range from abrasion to branch breakage, to perhaps whole colony dislodgement in extreme cases. Dislodged corals and coral fragments can potentially reattach and grow whereas a pulverized or crushed coral will be dead.

BECQ is concerned that the threatened coral species were not adequately surveyed. High regional coral species diversity, morphological similarities, and changing taxonomy make coral species identification in the region difficult. All three of the coral species listed as threatened under the ESA are morphologically similar to other species and are often misidentified *in situ*. Was the contractor who conducted the coral surveys proficient in local coral species identification? Also, reefs were only surveyed down to 12 ft. when impacts to the listed species may occur in deeper waters, especially for *S. aculeata* which is known to occur over a broader depth range (Brainard et al. 2011). The FEIS should reflect best available science when assessing potential impacts and when discussing avoidance, minimization, and mitigation of impacts of impacts the proposed action.

Sea Turtles

The DEIS currently states that there will be Less Than Significant Impacts to sea turtles from construction on Tinian and Pagan. BECQ disagrees.

In Tinian, it is unclear whether the soft-start procedure is a proven method to scare away sea turtles. The DEIS assumes the turtles will quickly depart the area. However, sea turtles are often easily caught by researchers – BECQ doubts the sea turtles will quickly flee the area. The DEIS openly admits that sea turtles could be struck during the construction phase, causing mortality or injury. Operations will continue to disturb habitat, limiting foraging and resting areas for sea turtles. BECQ argues these are Significant Impacts.

In Pagan, the DEIS argues that there are "relatively few sea turtles in the approach zones and infrequent and localized vessel activity within these zones" (p.4-322). Anecdotal evidence suggests there are many sea turtles surrounding Pagan.

The DEIS's assessment of sea turtle populations is based on a couple days of research over the course of a month, July 2013. BECQ argues more research should be collected on sea turtle populations, especially around Pagan.

Marine Mammals

Not enough information was provided regarding marine mammals for the islands of Tinian and Pagan. There are documented populations of marine mammals specifically within the operational areas of Tinian and Pagan. BECQ is also concerned that the marine mammal surveys the DoD's conclusions rely on did not use a rigorous enough sampling design.

Conclusion

The CJMT Draft EIS/OEIS is severely lacking in clear references/citation, inclusion and consideration of CNMI laws and regulations, and clear, specific mitigation plan. If this EIS is to proceed through to a final draft, it will need substantial revisions and additions that add substance and clarity. As the text stands, it greatly lacks clarity in many sections and is poorly referenced throughout. Secondary sources are often cited (i.e., the appendices), rather than the primary source material. Lastly, as the process moves toward a final EIS, the reviewers hope to see impact assessments based on clear, shared data, as well as concrete, committed and tangible mitigation options laid out.

Recommendation

In Table 4.20-1 all designations of Less than Significant Impact should be changed to Significant Impact including listings under Construction and Operation for Marine Habitat/Essential Fish Habitat, Marine Flora, Marine Invertebrates (Coral and Non-Coral), Fish, Sea Turtles, Marine Mammals. Further, Significant Impacts will occur at all beaches where CJMT operations will occur.

Mitigation procedures must be proposed by DOD and discussed with BECQ as well as other CNMI agencies. The FEIS should reflect best available science when assessing potential impacts and when discussing avoidance, minimization, and mitigation of impacts of impacts the proposed action.

Cultural Resources

The DEIS notes that there will be Significant Impacts to cultural resources throughout the MLA from Construction impacts. However, the DEIS says these impacts will be mitigated to Less than Significant Impacts through discussions with the CNMI Historic Preservation Office and other interested parties. The DEIS does not describe what these possible mitigation measures may be and so it is impossible to say that impacts will in fact be mitigated to be Less than Significant. BECQ also opines that it will be difficult to mitigate a historical or cultural site that is destroyed by construction or operations. Destroyed sites cannot be brought back or repaired, they are gone forever.

BECQ is also concerned that the Cultural Resources chapter privileges sites of recent history. Japanese and WWII sites are easily identified and have not faded from memory. Such sites are recorded, identified, and often remembered. However, the same cannot be said for earlier historical sites. Although some latte sites are identified as well as areas that are known for pottery remnants in the document, this is by no means comprehensive. The CNMI has not had the resources to even begin to study the extent of historical remains and sites on Pagan and Tinian. We cannot just hope that because an area has not been excavated, cleared, or studied that it is not home to precious cultural and historical resources. For example, page 4-330 states "construction could also significantly impact 3 acres of native limestone forest, which could contain resources of cultural importance." Could is not acceptable.

Throughout this section, there are statements such as "no resources of cultural importance were identified within …." This is incorrect. Pagan and Tinian are small islands. There is not a part of these islands that are without cultural importance. Simply because a plot of land is not marked or advertised does not mean that it is without value to those who have called it home for centuries. Another example is 4-333 "…is considered a potential traditional cultural property." What does that mean? All property in the CNMI is cultural property. In the Analysis of the Constitution of the Commonwealth of the Northern Mariana Islands, a document written by the CNMI's first Constitutional Convention, they clearly explain the importance of land to the living culture of the people of the CNMI. "It [land] gives roots to the pride, confidence and identity as a people…"

Throughout the section there is reference to "significantly impacting" historical and cultural sites. One example are latte sites on Tinian and Pagan. These are very significant historical and cultural sites. They are irreplaceable. It is unacceptable that these important symbols of Chamorro culture and history be jeopardized for a temporary training effort. Those that haven't been destroyed by wars and weather have stood for centuries as a testament to the long standing culture of the people of the CNMI.

Native forest should not be considered separate from historical and cultural sites. Native forests are critical historical and cultural sites whether or not they are home to latte sites, pottery shards,

or WWII artifacts. Chamorros and Carolinians have lived and relied on native forests long before westerners began to arrive and they are an important part of the culture of these islands.

There are numerous cultural practices the DOD has not accounted for, including Firowrow, which requires the use of peaceful beaches when a family member passes away. Such cultural practices and their possible loss are not appropriately addressed in this chapter or in 4.15 *Socioeconomics and Environmental Justice*.

Tinian

- ***Page 4-328:*** (as mentioned in other sections as well) During and after beach trainings (landings, swimming training, etc.) the military will restore the beach topography within 3 days. What about the surrounding vegetation? All four of the beaches under the proposed training activities have heavy vegetation, including vegetation used for traditional medicine, and in some cases archeological relics in very close proximity to the beaches. This EIS needs to address the impact to these resources, and what avoidance or mitigation there will be.

Recommendations

- The FEIS should account for the value of native forest and the range of cultural practices associated with these lands and coastal areas. Current and historic cultural resources should be fully acknowledged, and accounted for in order to assess the potential direct, indirect, and cumulative impacts of the proposed action.

- The DOD must describe how Significant Impacts will be mitigated to Less Than Significant Impacts.

Visual Resources

This entire chapter is based on the erroneous assumption that a "visual resource" is specific in location and often uni-directional. The true impacts of vegetation clearing and infrastructure building are not accounted for, due to the argument that visitors at beaches and other coastal areas only look seaward. There is no accounting for the fact that tourists visit these areas not only for the seaward view, but for the overall remote and natural feel of most of these locations. No one takes pictures of just a horizon. The surrounding topography and vegetation are important parts of the aesthetic value of these locations and the impact that these training activities will have on the aesthetic value needs to be discussed and analyzed. The section on Pagan assumes that since there are no official "visual resources" or lookouts on the island, the changes to the relatively untouched, pristine visual landscape are negligible. This is an erroneous assumption and the true impacts of the training exercises on the visual landscape of Pagan need to be assessed and accounted for.

- There is no discussion of the impact that the expansion and development of the Port of Tinian, and the resulting transportation corridor between the Port and the Military Lease Area, will have on the aesthetic integrity of Kammer Beach or House of Taga. This needs to be addressed.
- ***Section 4.12.3.1.2*:** There is no discussion of the impact that the new infrastructure and associated visual impacts (buildings and light pollution) will have on the planned development on the Alter City leased area. Again, the Alter City plans need to be accounted for and the impacts of this proposed action discussed.
- Will there be any impact from the new lighting at beaches and training facilities on turtles and their ability to nest?
- ***Section 4.12.3.1.2.2*:** Unai Chulu is not a "visual resource" in only one, ocean-facing direction. Its appeal is due to the idyllic, natural nature of the surrounding area. The beach is lined with coconut trees and ironwood trees, and is a popular tourist spot for photographs. Will the tracked vehicle course be visible from the beach or parking lot? What will the impact be to the vegetation lining the beach? The overall impacts of both the landing ramp construction and the training activities on the beach's aesthetic integrity (including nearby vegetation) need to be addressed here. Grading the sand is not an acceptable mitigation effort, if all of the vegetation is going to be destroyed. This is not a "less than significant" impact.
- ***Section 4.12.3.1.2.2*:** The above also applies to Unai Babui and Unai Lam Lam. Both of these beaches at present are remote, natural, and surrounded by jagged limestone rock and lush, thick vegetation. Any large-scale training operation on these beaches will undoubtedly impact the surrounding vegetation and overall aesthetic value to the beach,

which will change the feel and appeal of these beaches to visitors. This needs to be accounted for. These are not "less than significant" impacts.

- ***Section 4.12.3.1.2.4:*** The above also applies to Blow Hole. While this location is not necessarily as visually "pristine" or idyllic, the overall feel of the location will be altered by construction of military infrastructure within sight of the Blow Hole area. The radar tower that is proposed to be constructed nearby the Blow Hole would likely be in a direct line between the Blow Hole and the view of Saipan, and therefore would be blocking part of this viewshed. Therefore this is not a "less than significant" impact.
- ***Section 4.12.3.1.2.9:*** Similar to the above issues. Unai Dankulo is a pristine, coconut tree filled beach with significant historical and cultural value. The aesthetic integrity of the area will be severely impacted should a Surface Radar site be constructed in such close proximity to the beach. Therefore this is not a "less than significant" impact.
    - Would the observation post planned for just north of Unai Dankulo be visible? Because it appears to be directly between the beach and a beautiful visual shot of Saipan and Mount Tapochau.
- ***Section 4.12.3.1.2.9:*** Similar to the above issues. Unai Masalok is a heavily vegetated area with a narrow pathway that is lined with plants and flowers. The parking area and surrounding forest also contains significant historical artifacts, both WWII and pre-contact. It is unbelievable that intense combat swimmer training, small boat landings, and Landing Craft Air Cushion vessel landings on the beach would not impact the nearby vegetation unless there will be no access to the beach from land. This needs to be clarified and the impacts to the nearby vegetation and overall aesthetic value of the area needs to be discussed.

Recommendations

- The impact assessment should use a broader definition of visual resources, taking into account forested areas and a 360 degree view.
- The FEIS should designate Significant Impacts for Visual Resources under Construction and Operations for Pagan and Tinian unless it can be shown that impacts from the proposed activities will not be highly visible and significantly alter current viewsheds and visual experiences of these areas.

Transportation

Transportation issues fall primarily under the purview of CNMI's Department of Public Works (DPW) and the Commonwealth Port Authority (CPA). However, BECQ has a few concerns regarding the Transportation chapters of the DEIS.

Air Transportation

Neither the Airspace nor the Transportation chapters mention the presence of Cape Air (run by United Airlines) on Tinian. Cape Air runs commuter flights between Saipan, Tinian, and Rota. The DEIS should account for all the scheduled commuter flights which run daily between these islands.

In Chapter 4.6 *Airspace*, the DEIS states that "No additional air traffic is proposed for Saipan International Airport" (p.4-142). There are several new resorts proposed or under construction on Saipan and an increase in tourism visits is expected. Has the DEIS accurately taken into account the expected increase in tourism and its impact on flights?

Will additional training or insurance premiums be required for operators of commuter flights flying around military space and how will that affect these airline's bottom line?

BECQ is generally concerned with the impact the CJMT will have on Tinian's civilian airport, as well as the increase in flight times to Tinian and the affect that will have on flight costs and tourism.

Ground Transportation

The DEIS does not include Alter City's proposed Plumeria Resort which would be situated just south of the MLA on the west side of the island. The DEIS states that motorists on Broadway would be diverted to 8th Avenue when access to the MLA is allowed (p.4-398). This would increase traffic through Plumeria Resort as 8th Avenue runs through Alter City's leased property. Has DOD discussed the use of 8th Avenue with Alter City? How would increased traffic on 8th Avenue affect the resort experience? We need more specifics about how "intermittent" (p.4-174) the impact would be to 8th Ave, the port, and other non-military infrastructure. "Intermittent" is a vague and broad word. The DEIS should also address whether there will be advance notice of activities on 8th Avenue.

The use of 8th Avenue by the military could also potentially have effects on Recreation and should be addressed in the DEIS chapter on Recreation.

Marine Transportation

BECQ requests more information regarding the quantity of traffic through Tinian Harbor. Will Tinian Harbor be able to handle the increase in traffic and will Tinian Harbor be able to handle the increase in construction material being shipped to Tinian? What is DOD doing to avoid bottlenecks at Tinian Harbor?

More importantly, what, specifically, will the DOD do to avoid biohazards at Tinian Harbor? Although the DEIS mentions Biosecurity Outreach and Education as a BMP and the construction of a biosecurity facility, BECQ would appreciate more information on what exactly the DOD has planned. Are there provisions for avoiding marine invasive species traveling in ship ballast or to avoid hull fouling?

Recommendations

- Include information on the economic impacts to commuter flights
- Address the effects of the CJMT on the Plumeria Resort and use of 8th Ave
- Address biosecurity issues to a greater degree, including handling of ship ballast and hull fouling
- The FEIS should account for current transportation uses and potential direct, indirect, and cumulative impacts to these uses, included increased travel times and potential environmental impacts from significant expansion of military traffic from international ports and airports.
- The FEIS should designate Significant Impacts for Air, Ground, and Marine transportation for Tinian and Pagan

Utilities

This section covers impacts to (or due to) electrical, water, sewer, stormwater, solid waste and telecom utilities. BECQ comments are limited to the water, sewer, stormwater and solid waste infrastructure as the other utilities are not under DEQ oversight. The only CNMI regulations referenced are the Earthmoving and Erosion Control Regulations, the Stormwater Management Manual and the Wastewater Treatment.

Tinian

Compliance with Local and Federal Laws

The CJMT plans to build a new water system in the Military Lease Area (p.4-413). The DEIS notes that "The operation and maintenance of this new system…would be independent of the Commonwealth Utilities Corporation's water system." (p. 4-419) Although the water system will be independent of the CUC system, it must still be compliant with local and federal laws. The Utilities chapter does not mention the Federal Safe Drinking Water Act or CNMI Drinking Water Regulations.

The CJMT will also have to dispose of solid waste. CNMI Solid Waste Regulations are not mentioned.

Solid Waste

BECQ would like to see more information on the CJMT's plans for solid waste disposal.

The DEIS notes:

- "The existing solid waste facilities on Tinian are not in compliance with regulatory requirements, and therefore solid waste generated would have to be transferred off-island to a compliant landfill" (p. 4-417)
- "…municipal solid waste would be separated, shredded, compacted, baled, and stored in holding areas. The processed waste would then be shipped to a facility in compliance with U.S. Environmental Protection Agency/Resource Conservation and Recovery Act requirements."

More information is needed regarding the CJMT's solid waste disposal plans. The DEIS should offer a list of compliant landfills practically available. If the Saipan landfill is proposed, the DEIS should note its impact to capacity. Storage of municipal solid waste is a potential health issue, especially with regard to attraction and propagation of vectors (rats). 40 CFR §243.201-1 requires that "[s]olid waste which contains food wastes shall be collected at a minimum of once during each week." Some might interpret the statement in the EIS that solid waste could be stored at the base camp (indefinitely?), but federal regulations require at least weekly collection of food waste. Finally, "transfer station" at the base camp would be considered a new solid waste

management facility. Such a facility will have to comply with CNMI Solid Waste Management Regulations. The FEIS should detail how solid waste will be managed and what the direct, indirect, and cumulative impacts of these management activities will be.

Water

As mentioned in the Water Resources section of these comments, BECQ is concerned about possible saltwater intrusion if the DoD taps into Tinian's groundwater supplies. Appendix P notes that "The CUC has apparently never operated both wells simultaneously, so the effects would have to be evaluated. An aquifer study has been recommended to assess the production and quality that might be anticipated as a result of the increased groundwater extraction to meet the demands of the proposed action." (Appendix P, Volume III, p. 6-1) BECQ agrees with this recommendation: the DOD must conduct further studies on saltwater intrusion on Tinian.

Pagan

Disposal of Reverse-Osmosis Brine Water

The DEIS states that ""It is anticipated that potable water would be provided by the use of portable de-salinization units…" (p. 4-430) De-salinization units produce a stream of concentrated brine water. Impacts of the concentrated stream of brine water, and potential means of disposing of the brine water were not considered in the DEIS. The DEIS should consider and address such impacts.

Solid Waste

The DEIS states that waste on Pagan "would be collected in containers and shipped to an approved facility." (p 4-431) The DEIS should describe which waste facility it will be shipping to and what the impacts will be to that facility.

Recommendations

- The DEIS should offer a list of compliant landfills practically available and detail costs and benefits of using these options as opposed to building a RCRA-compliant landfill on the Military Leaseback Area, as had previously been discussed with the CNMI government.
- If the Saipan landfill is proposed, the EIS should address pressing solid waste management questions. These include:
    - What is the impact of additional solid waste to the current capacity?
    - What are the implications of current management challenges and operational needs on the feasibility of this proposal?

    - If the Saipan landfill is the preferred solid waste disposal location, DoD should consider providing the necessary funding to line the third cell of the Marpi landfill to enable use of the second cell, as well as providing funds, technology, and technical assistance to ensure reliable electricity (perhaps through renewable energy deployment and backup generators) needed to enable the system pumps to operate reliably.
    - Commitments to ensure recycling are appreciated, and would be bolstered by the establishment of a reliable island-wide recycling program.
    - DoD should consider working with relevant agencies and government offices to implement local green-waste composting and e-waste disposal programs to support mutually beneficial efficient use of existing landfill space.
- An independent potable water system will have to comply with the Federal Safe Drinking Water Act and the CNMI Drinking Water Regulations, including being maintained by certified personnel.
- A study on the possibility of saltwater intrusion if Tinian's groundwater is used by the military should be conducted
- Address how long waste will be stored at the base camp
- A "transfer station" at the base camp would be considered a new solid waste management facility. Such a facility will have to comply with CNMI Solid Waste Management Regulations.
- Pagan Disposal of Brine Water: what means of disposal of the brine water will be used?
- Pagan: What solid waste facility is practically available for shipping waste to? What are the impacts to that facility?

Socioeconomics and Environmental Justice

Environmental Justice

The DEIS is not in compliance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations. BECQ does not agree with how the DEIS has circumscribed the populations in question. The DEIS also does not appear to offer a definition for "environmental justice" (EJ). As outlined below BECQ cannot agree that the Department of Defense has fulfilled its responsibilities in "identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations" (EO 12898).

In regards to environmental justice impacts on Tinian, the DEIS states the following:

- ***Page 4-449*:** …no disproportionately high and adverse human health effects from geology and soils, water, and air quality to low-income and minority populations would occur.
- ***Page 4-450*:** (regarding noise) The impact would not be considered disproportional as all of Tinian is considered a minority and low-income area.
- ***Page 4-450*:** …access restrictions would be shared equally throughout the island and would not be considered disproportionately high and adverse to minority and low-income populations.
- ***Page 4-450*:** A potentially significant impact on community character and community cohesion was identified but this would affect all residents similarly and so would not be a disproportionate impact.

These comments assume that because impacts would be equally shared throughout the island, there would be no disproportionate impacts. The DEIS should acknowledge that the people of Tinian are being disproportionately impacted as compared to other American citizens. As outlined on pages 5-9 of these comments, BECQ does not accept that the CNMI is the only possible location for this project. The CJMT could have been located elsewhere, but the Department of Defense chose to place its project in a minority and low-income area. The DEIS should acknowledge that the CJMT chose a location filled with minority and low-income people, and that these people will be disproportionately affected when compared to other American citizens. The DEIS should also acknowledge perceived environmental justice issues as viewed by the Chamorro and Carolinian peoples inhabiting Tinian. Table 4.15.3.5 should change all designations for 'Environmental Justice and Protection of Children' from NI (No Impact) to SI (Significant Impact).

In regards to environmental justice impacts on Pagan, the DEIS states the following:

- ***Page 4-454*:** …there are no residents on Pagan, Executive Orders for Environmental Justice and the Protection of Children are not relevant and no analyses of these issues were provided

As described on page 14 of these comments, there are residents of Pagan and many people in the CNMI consider Pagan their homeland. Activities on Pagan will affect the people who consider Pagan home. These people are minorities. The DEIS should acknowledge that the people of Pagan will be disproportionately affected by the CJMT when compared to other communities of the CNMI and when compared to other Americans. A row for "Environmental Justice and Protection of Children" should be added to Table 4.15.-2 and this row should be designated 'SI' for all alternatives.

According to the EPA, environmental justice is "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." (EPA 2012)

According to the EPA, "[f]air treatment means no group of people should bear a disproportionate share of the negative environmental consequences". BECQ argues that the people of Tinian and Pagan should each be considered a 'group', with the Carolinian and Chamorro people further being classifiable as subgroups that are discrete and insular minorities. Analyzing the distribution of effects *within* these groups does not satisfy an environmental justice analysis. The distribution of effects outside of these groups must also be acknowledged.

According to the EPA, "Meaningful Involvement" includes opportunities to participate in decisions and that the public's contribution can influence decision making. As described on pages 9-10 of these comments, BECQ argues that the community was not sufficiently involved throughout the decision-making process.

Given the EPA definition of environmental justice, BECQ feels the Department of Defense has not appropriately described and addressed the environmental justice issues of the CJMT.

The DEIS should be edited and the FEIS should acknowledge the disproportionate effects of the CJMT to the people of Tinian and Pagan. It is perplexing that the DEIS should purport to discuss environmental justice implications of the proposed action without actually including a definition of environmental justice and applying this definition to the analysis of this section. BECQ recommends that the FEIS include EPA's definition of environmental justice, describe what populations this definition is being applied to, and actually assess potential environmental and human health concerns and how they are being addressed by policies and procedures related to proposed CJMT activities as required by NEPA and DoD's 1995 Environmental Justice Strategy.

To comply with EJ requirements, the FEIS should include an assessment of minority groups, with consideration of human and environmental health impacts to discrete minority groups including the Chamorro and Carolinian inhabitants of Tinian and Pagan. If environmental health impacts are anticipated to extend throughout the CNMI – for example due to increased bioaccumulation of toxins of concern that could be consumed in fish and livestock – the FEIS should identify these risks and explain how DoD policies and procedures minimize and mitigate these risks.

Tinian

BECQ is concerned that the DEIS underestimates the socioeconomic impacts of the CJMT to Tinian as outlined below.

Tourism

The DEIS states that there will be a decline "of between 0.8% and 1.6%" in tourism visitors to Tinian (p.4-445). It is unclear from the DEIS and the Appendices how this number was calculated. Appendix A of Appendix Q (Socioeconomic Impact Assessment Study) suggests that an exit survey was performed for Chinese and Korean visitors to assess the impacts of restricted access to tourism and repeat visitors. This survey data "yielded high estimates of 19.8% and 11.1% reduced growth and low estimates of 14.5% and 8.1% reduced growth for China and Korea, respectively". No other methodology details are provided for how the DEIS came to the 0.8% and 1.6% numbers. The DEIS should provide more information on its methodology including how baselines and future changes were calculated.

BECQ is concerned that the DEIS does not take into full account the potential loss of tourism in the future, especially in regards to investment from future resorts and facilities. Alter City is applying for permits at BECQ and will be a luxury resort for tourists in Tinian. Although Alter City is mentioned in Chapter 5, Cumulative Impacts, it is not given a single mention in chapter 4.15, Socioeconomics and Environmental Justice. It is also not mentioned in Appendix Q. The DEIS should be edited to include affects to tourism in light of Alter City's proposed plans. Effects should include loss of tourist individuals, loss of tourism dollars, loss of jobs, loss of construction dollars, and loss of potentially useful facilities (i.e. ferry services). The CJMT could lead to fewer investors choosing Tinian for new projects, which would have a long-term impact on Tinian's economic prospects. The DEIS should include more information on the long-term prospects of Tinian's tourism economy.

Agriculture

The DEIS needs to address the loss of agricultural lands. The DEIS states that "approximately 230 acres (93 hectares) of prime farmland soils would be lost to future use" (p. 4-20). This is approximately 16% of Tinian's total prime farmland soils. The loss of prime farmland soils could limit economic opportunities for the people of Tinian if the leased land is ever given back.

Water

As noted previously in these comments, saltwater intrusion could contaminate Tinian's groundwater drinking supplies. If Tinian's groundwater becomes undrinkable, the Tinian community will be forced to purchase potable water. This will be an added economic burden to an already poor community.

Subsistence Lifestyle

The DEIS does note under Section 4.15.3.1.2.4, Community and Social Topics, that there would be "decreased income for those that participate in subsistence and commercial gathering activity" (p.4-448). The DEIS does not quantify this decreased income. The DEIS should include data on how much income will be lost from decreased gathering activities due to the CJMT.

Community Character

The DEIS states that there will be 'less than significant impacts to the overall community' (p.4-449). The DEIS does not offer enough evidence to support this statement. The DEIS goes on to say "these changes may significantly impact the perceptions that some Tinian residents have of the place they live" (p.4-449). Perceptions of community character, as perceived by the community, should have precedence over the military's opinion of the community. The DEIS should be edited to reflect community opinion.

The DEIS acknowledges that community character may change, that there could be fewer opportunities to practice cultural activities, and fewer opportunities to maintain social cohesion. We would suggest changing 'could' to 'will'. The CJMT will undoubtedly change the social character of Tinian. The loss of public access to beaches, spearfishing sites, and cultural sites will change how people spend their time and relate to each other on a daily basis.

The DEIS notes that "military personnel tend to be respected by the local population on Tinian and there is not a history of conflict" (p. 4-449). The CJMT will change the number of military personnel on island and the types of activities occurring on island. The CJMT could change the relationship between the people of Tinian and the military. More evidence is needed to show that conflicts will not occur.

The DEIS and Appendix Q claim the CJMT will make Tinian more "modern". These statements include:

Page 4-449: This could accelerate the trend of the Tinian community moving away from these activities to a more modern community with different cultural practices

Appendix Q, ES-5: The proposed action could affect community character on Tinian by changing the nature of everyday activities for some residents of Tinian, accelerating the trend of

Tinian moving away from a traditional community to a more modern community less in touch with traditional skills and cultural activities

***Appendix Q, 5-22*:** …and accelerate the trend of Tinian moving away from an agricultural community practicing subsistence activity to a more modern community lacking those skills.

These statements imply a trade-off of habits and skills, as well as a progression towards something new and more developed. The people of Tinian are, currently, a modern community that happens to maintain traditional practices. It is unclear what the CJMT offers to make Tinian *more* 'modern'. The DEIS should choose a less contentious word than 'modern'.

Pagan

The DEIS states that "Economic conditions and public services are non-existent on Pagan" and that there are "no residents on Pagan" (p.4-454). As outlined on page 14, there are Pagan residents and a desire by the Pagan community to return to their home. Table 4.15-2, *Summary of Impacts for Pagan Alternatives* should be edited to show Significant Impacts for Community and Social Topics, rather than "Potential for SI" as it is currently.

Conclusion

Finally, in Appendix Q, on page 5-16 it says "[t]hese potential impacts are covered in Section 5.5.1, *Social and Community Topics*. This should be changed to Section 5.4, *Community and Social Topics* to reflect the current Appendix.

Evidence that corroborates the human and environmental health risks of exposure to materials used in live fire munitions is substantial (see Water Resources section), and the burden of proof rests with the Department of Defense to demonstrate that the addition of substantial amounts of pollutants of concern would not negatively impact the health and environment of this community. In absence of such evidence BECQ urges the Office of Economic Adjustment to make a finding that the community that would experience a "direct and significantly adverse consequence" to community-specific needs and resources and require substantial mitigation to the proposed action – as well as avoidance and minimization – to reduce the risk of causing disproportionate harm to the minority populations that inhabit both Tinian and Pagan.

Recommendations

- The FEIS should define environmental justice and acknowledge that the CNMI is home to "discrete and insular" minority groups. CNMI residents do not become less of a minority population simply because lands that are home to other US populations were not considered for the DoD's proposed actions.

- The FEIS should identify direct, indirect, and cumulative environmental and human health impacts of the proposed actions that may disproportionately effect "discrete and insular" minority groups.

- The FEIS should identify how DoD policies and procedures associated with the proposed CJMT activities will address environmental and human health impacts of the proposed actions that may disproportionately effect "discrete and insular" minority groups.

- The DoD should ensure compliance of the proposed action with any and all requirements of Executive Order 12898 and DoD's 1995 Environmental Justice Strategy, including:
    - Ensuring that "a healthy and safe environment exists around DOD activities that are located in or near minority and low-income populations";
    - Implementing DoD operations in accordance with principles that include promoting partnerships with all stakeholders, identifying the environmental and human health impacts of DoD activities on minority and low-income populations, and improving the day-to-day operations of installations to reduce those impacts;
    - Implementing an "accountability system for identifying and monitoring environmental justice activities" and reviewing operations, activities, and land use to determine whether disproportionately high and adverse human health and environmental effects on minority and low-income populations living near the installations have been addressed as part of self-audits;
    - Enhancing existing or developing "new site-specific study mechanisms to identify high risk populations" and "revise and reissue DoD guidelines on implementing NEPA to ensure that environmental justice considerations are documented in the NEPA process" and that potential impacts are addressed; and
    - Ensuring that "DoD installations will, prior to applying for a variance from any local environmental requirements, evaluate each request to determine if such a variance will have a disproportionately high or adverse human health or environmental effect on minority and low-income populations."

Due to the potentially significant impacts of proposed activities, unless the scope of activities and extent of impacts is substantially reduced in the FEIS, BECQ recommends that DoD adjust Table 4.20-1 so that NI, LSI, and BI are read as SI or Significant Impact in order to reflect actual conditions and likely future impacts of proposed actions.

Hazardous Materials and Waste

CNMI Regulations

The DEIS incorrectly describes CNMI regulations on the following pages:

- ***Page 3-275:*** The DEIS lists applicable CNMI regulations. The CNMI Pesticide Management Regulations and Aboveground Storage Tank Regulations should be added to the list.

Tinian

Aboveground Storage Tanks

BECQ needs more information on the proposed construction of aboveground storage tanks (ASTs) for fuel storage in order to determine their environmental impact. More information on the type of fuel, volume of storage tanks, location, and construction details are requested.

The DEIS does not specifically indicate what type of fuel and volume the ASTs will contain. It is important to know the fuel type and volume in order to understand the concern for blast distance hazard to the surrounding environment in the event of a potential explosion due to natural calamities. Figure 4.16-1 (p.4-461) indicates that the ASTs could be constructed near residential areas and near the commercial airport area. Safety is a priority in these areas.

Figure 4.16-1 shows the location of ASTs near a residential homestead. The DEIS indicates that the Tinian base camp and bulk fuel storage areas would use ASTs with a 500,000 gallon capacity and will hold fuel for a period of thirty days during operations or longer (p.4-467). It is unclear whether the ASTs near residential homestead areas will be of the same size. BECQ is opposed to locating ASTs near residential homestead areas for the reason that the tanks shall be unsupervised during times of non-operation. What will happen to the left over fuel in the tanks after the military training is complete for the year? Will unused fuel remain in the tanks, and what maintenance plan is there in place to ensure ASTs with remaining fuel are inspected for leaks outside of training operations?

Figure 4.16-1 also indicates that ASTs may be constructed near the shoreline. BECQ requests specific coordinates for the location of the ASTs. NMIAC § 65-5-210 states:

> No AST systems shall be installed after the effective date of the regulations in this chapter in the following locations: (a)(1) Within a wetland or within five hundred feet of a wetland boundary; (2) Within five hundred feet of inland waters; (3) Within five

hundred feet of the shoreline (as measured from the mean high water mark); (4) Within tidal or storm water inundation areas.

The EIS/OEIS did not describe whether the ASTs will be constructed over impervious surfaces and/or bermed. DoD constructed fuel tank farms on Saipan after the invasion and capture of Saipan during WWII; most of these ASTs were constructed over a soil foundation. Six decades later, and these ASTs were never properly decommissioned, had residual product in them, and eventually leaked into the environment once their steel tanks began to deteriorate. BECQ is concerned that the new ASTs could eventually also leak into the environment, affecting the groundwater of Tinian.

Hazardous and Contaminated Waste Compliance with RCRA

The DEIS indicates that all construction hazardous waste will be shipped off-island for disposal to the appropriate facility site (p.4-464). Does DoD define Hazardous Waste according to the EPA RCRA regulations? Is DoD going to follow the RCRA waste determination protocol with the waste it will generate? Additionally, will the storage time frame for the hazardous waste generated by DoD on site comply with the EPA RCRA 90 or 180 days storage period from time of generation or is DoD exempt from this requirement?

The DEIS indicates that unexploded ordnance (UXO) identified during the construction phase would be disposed of in accordance with applicable regulations (p.4-465). In Tinian there is a designated UXO detonation site, however any UXO detonation event requires that a RCRA Emergency permit would need to be obtained from EPA. How and where would DoD store and dispose of the UXO discovered during construction?

On page 4-470, the military has indicated that hazardous waste generated from the training operation, and any recyclable items, will be transported to Guam for recycling and disposal. BECQ is unaware that there is a hazardous waste disposal facility in Guam and whether this facility is a permitted RCRA Subtitle C hazardous waste landfill. Currently, Guam does not have a permitted RCRA Subtitle C hazardous waste disposal facility. Current hazardous waste firms based on Guam ship their hazardous wastes to the mainland US. The EIS should identify the facility name and location, in the document, for regulatory reference. The DEIS does not state that operations relating to the management of hazardous waste will be conducted in accordance with all local and federal requirements.

The DoD should notify BECQ of its scheduled disposal of hazardous wastes from Tinian and include the type of waste, volume and information name of disposal facility site.

Munitions in Soils

The DEIS states that munitions constituents from munitions and explosives of concern (MECs) will be deposited into the environment during scheduled training operations. How would DoD determine when and how frequently it should conduct range clearance operations to remove explosive constituents from accumulation in the training range area (p. 4-466)? Range clearance operations conducted to minimize the impact of explosive constituents found in soil would mean loss of soil mass or layers within the RTA, how does DoD plan to restore those soils removed from the RTA. CNMI anticipates these explosive constituents impacted soils will be disposed off-island as determined necessary through soil sampling data.

Pagan

Storage Tanks

The DEIS indicates that it will not use ASTs on Pagan. Rather, the DoD will use ninety 55-gallon drums to store 5,000 gallons of fuel. BECQ finds this storage plan to be insufficient. The DEIS states that a containment berm would be included, however it is unclear whether the berm will accommodate 110% of the proposed fuel in the event of a potential release from the drums. Currently, it appears as though the CJMT is circumventing the AST regulations by choosing to not construct aboveground storage tanks on Pagan. Best management practice would be to construct aboveground storage tanks for the construction period into the operational period of the proposed training. ASTs would then require the Spill Prevention, Control and Countermeasure plan that outlines the responsibility of storage, maintenance and operation of the AST.

Hazardous Waste

The DEIS states that hazardous materials will be stored at "a temporary" storage site and that there would be "no long-term storage of hazardous materials". How long the DoD plans to store hazardous materials on Pagan is unclear, more detail is requested. How long will the storage period be? More information on the disposal schedule, type of waste, volume, and the name of the eventual disposal facility site is also requested.

Contaminated Sites

On page 4-485, the EIS mentioned contaminated sites have been identified. On Pagan, it would be prudent for DoD to make a determination of baseline contamination data at these sites in order to have baseline information of what contaminants already exist on site. This is important so that any new introduced contaminant, i.e. explosive constituents, could be attributed to the operation by the DoD.

Pagan Population

The DEIS states that "Currently, Pagan is uninhabited, and therefore no hazardous materials are used on the island" (p. 3-291). However, there are residents and a limited amount of hazardous

materials and wastes are generated (related to cooking, camping, generator use, etc.). Further, JG Sablan engaged in mineral mining activities and their operation resulted in the release of petroleum products into the environment.

Recommendations

- Describe size and location of aboveground storage tanks to be used on Tinian
- Use aboveground storage tanks on Pagan and leave ASTs for fuel storage needs once the CJMT activities are completed (if Pagan is to be used, which BECQ does not recommend)
- Notify BECQ of its scheduled disposal of hazardous wastes from Tinian and Pagan; and include the type of waste, volume and information name of disposal facility site.
- Address contamination of soils from munitions and cleanup of UXO

Public Health and Safety

The Public Health and Safety chapter of the DEIS focuses primarily on keeping civilians out of the MLA and posting fencing or signs warning civilians of activities in the MLA. BECQ is primarily concerned about the contamination of ground, water, and air resources (as outlined above) and how such contamination could affect the health of the people of Tinian. This chapter should address health concerns related to munitions constituents. BECQ would also appreciate more information on the distance the munitions themselves can travel. Is there any chance of munitions affecting boats passing by?

Recommendation

BECQ recommends outlining the possible health effects attributable to contamination from munitions constituents.

Programmatic Analysis of Future Potential Project Components

The DEIS's treatment of the relocation of the International Broadcasting Bureau is so inadequate as to preclude meaningful analysis. An Alternative that includes the relocation of the IBB cannot be adequately evaluated unless a concrete relocation plan is selected and evaluated.

The option identified for Saipan includes a portion of a privately owned and heavily used golf course, the owners of which would be unlikely to sell or welcome the construction of radio towers near the property. The Saipan option also is located in an area of historical significance and historical importance. The visual integrity of this location is the reason that visitors frequent the site, and this would be destroyed by the presence of the IBB.

The option identified for Rota is within the Sabana Conservation Area, created in 1994 to provide watershed protection as well as wildlife and forest conservation. BECQ is concerned that moving the IBB to this area could have Significant Impacts to wildlife and their habitat, and would be incompatible with the existing use designation of this area.

Recommendation

BECQ recommends the IBB not be moved to the proposed sites on Saipan or Rota. If the IBB is to be moved at all, a more detailed relocation plan must be provided.

Cumulative Impacts

General - Methods

BECQ has concerns regarding the methods and presentation of the Cumulative Impacts section. First and foremost, Chapter 5 does not actually describe any cumulative effects. Although the DEIS acknowledges that cumulative impacts may occur, it does not actually analyze or quantify these impacts. The DEIS says it used *Guidance for Preparers of Cumulative Impact Analysis* (California Department of Transportation 2005) to provide it with a methodology. According to the guidance document, "Step 6: Assess Potential Cumulative Impacts" should lead to conclusions that "characterize the severity or magnitude of the cumulative effect" (California Department of Transportation 2005, p. 13). Chapter 5 does not characterize the severity or magnitude of any cumulative effects.

An example of the DEIS's lack of analysis is found in the marine biology section. The DEIS states that: "The Mariana Island Training and Testing EIS/OEIS covers a much broader area than the proposed action, but there is potential for a cumulative impact to marine mammals and sea turtles due to in-water training, noise, and vessel traffic because the same populations would be affected by both projects" (p.5-53). The DEIS does not analyze to what extent this cumulative impact will affect marine mammals and sea turtles. The DEIS does not say anything else about the cumulative impacts of the MITT and CJMT in regards to marine biology. This is one example of many throughout the DEIS.

The *Guidance for Preparers of Cumulative Impact Analysis* refers to the Council on Environmental Quality's (CEQ's) guide, *Considering Cumulative Effects.* The CEQ guide describes a variety of methods and tools, qualitative and quantitative, for evaluating cumulative impacts. It is unclear from the DEIS what, if any, of these methods and tools were used to evaluate cumulative impacts related to the CJMT.

The DEIS description of cumulative impacts is currently unsatisfactory. According to NEPA law, an EIS should include a description of environmental consequences "whether direct, indirect, or cumulative" (40 CFR 1508.8). The DEIS must be revised to include an analysis of the severity and magnitude of cumulative effects. A description of the methods used to evaluate cumulative effects should also be included.

General – Present and Foreseeable Actions

The Cumulative Impacts section of the EIS identifies present and reasonably foreseeable future actions that could affect each resource and add to a cumulative impact with the CJMT. BECQ feels the MITT was under-represented in Chapter 5 of the DEIS. The MITT was not listed under: Geology and Soils, Water Resources, Air Resources, Noise, Airspace, Cultural Resources, Visual Resources, Utilities, or Socioeconomics. Although the effect of the MITT on each of these resources may be minimal, it is likely that the MITT would impact these resources to some

extent. The MITT should thus be listed as a foreseeable action under these resources. The current DEIS lists a range of present and foreseeable actions including resorts, homesteads, and renovations on Tinian. These actions are worth analyzing. However, BECQ is particularly interested in the cumulative impact of actions planned by the Department of Defense.

Also, in Table 5.2-4, Alter City is not listed as a Present and Reasonably Foreseeable Action although it is discussed throughout Chapter 5. Alter City is not mentioned in Chapter 4. The effects of the CJMT on tourism and potential resorts should be addressed.

General – Presentation of Information

Tables 5.3-1 and 5.3-2 summarize the cumulative impact effects for Tinian and Pagan. The first row of the table is labeled "Proposed Action Alternatives 1, 2, and 3 highest level of significant impact". It appears from this table that all the proposed action alternatives have the same outcome. If all the alternatives have the same level of impact then they are not actually alternatives. This table should be made clearer to emphasize the difference between the alternatives.

Tables 5.3-1 and 5.3-2 are also confusingly labeled for rows four and five. The fourth row of the table is labeled "…i.e. Is there a potential for a cumulative impact?" and the fifth row is labeled "Is there a potential cumulative impact?" The fourth row is filled in with many more yeses than the fifth row. It is unclear what happened in the analysis between rows four and five. These rows should be renamed to be clearer.

Table 5.3-1 has a footnote labeled "[6] There would be an overall beneficial cumulative impact to socioeconomics". We disagree with this statement; the CJMT would have a significant impact to the socioeconomics of Tinian (as described on pages 95-99). There is no 6 within the table itself and so this footnote should be removed.

Finally, BECQ disagrees with the Yes and No designations in these tables as outlined throughout these comments. The CJMT would have a Significant Impact for all categories of resources based on the arguments listed above.

General – Significance of Impact

BECQ disagrees with the findings of Significant Impact, Less than Significant Impact, and Benefit Impacts outlined in Chapter 5 and summarized in Tables 5.3-1 and 5.3-2.

Recommendation

- Address cumulative impacts by quantifying cumulative impacts, not just listing impacts of separate projects
- Describe and use a methodology for quantifying cumulative impacts, including criteria and threshold values for each impact assessment

References

Process

Bacon, Lance M. April 29, 2015. "U.S. negotiating to rotate troops to 8 Philippine bases". *Navy Times*. Retrieved from http://www.navytimes.com/story/military/pentagon/2015/04/28/us-negotiating-troop-rotation-philippines-catapang-china-base-troops/26512301/

Department of Defense. (2009). *Base Structure Report Fiscal Year 2009 Baseline (A Summary of DoD's Real Property Inventory).* Retrieved from http://www.defense.gov/pubs/pdfs/2009Baseline.pdf

Department of Defense. (1999). *Record of Decision for Military Training in the Marianas.* Retrieved from http://www.gpo.gov/fdsys/pkg/FR-1999-08-18/html/99-21375.htm.

Department of Defense. (1995). *Strategy on Environmental Justice*. Retrieved from http://www.denix.osd.mil/references/upload/DoD-Environmental-Justice-Strategy-24-Mar-1995.pdf

Whitlock, C. (2012). "U.S. seeks return to SE Asian bases". Retrieved from http://www.washingtonpost.com/2012/06/22/gJQAKP83vV_story.html

Approach

Commonwealth of the Northern Mariana Islands. (2008). *Public Law No. 16-50*. Retrieved from http://www.cnmilaw.org/pdf/public_laws/16/pl16-50.pdf

Council on Hemispheric Affairs. (2011). "Clearing Out without Cleaning Up: The U.S. and Vieques Island". Retrieved from: http://www.coha.org/clearing-out-without-cleaning-up-the-u-s-and-vieques-island/

DoD. (2002). "DoD Issues New Environmental Policy". Retrieved from: http://archive.defense.gov/Releases/Release.aspx?ReleaseID=3317

Hofschneider, A. (2014). "Promised Land: Will Kahoolawe Ever Be Saved?" *Honolulu Civil Beat*. Retrieved from: http://www.civilbeat.com/2014/10/promised-land-will-kahoolawe-ever-be-saved/

Prouty N, Storlazzi C, McCutcheon A, Jenson J (2014) Historic impact of watershed change and sedimentation to reefs along west-central Guam. *Coral Reefs*.doi:10.1007/s00338-014-1166-x.

Turalba, R. & Willmott, D. (2004). "A Toxic Legacy: The U.S. Military in the Philippines and Puerto Rico". San Francisco State University. Retrieved from http://www.feingold.org/Research/PDFstudies/Turalba2004.pdf

Geology and Soils

EPA. (2012). *Site Characterization for Munitions Consituents.* EPA 505-S-11-001. Retrieved from http://www2.epa.gov/sites/production/files/documents/site_characterization_for_munitions_constituents.pdf

Greene, R. (2014). *Saipan Climate Change Vulnerability Assessment*. Retrieved from https://www.dropbox.com/s/rwt68rdxl636jjl/Saipan_VA_FULL.pdf?dl=0

Lockwood, J.P. & Torgerson, F.A. (1980). Diversion of lava flows by aerial bombing – lessons from Mauna Loa volcano, Hawaii. *Bulletin of Volcanology*. Vol. 43, Issue 4; pp 727-741.

Seielstad, B.G. (1944). Can We Blast Japan from Below?.*Popular Science*, January 1944, p. 103 –107.

Trusdell, F.A., Moore, R.B., and M. Sako.(2006). Preliminary Geologic Map of Mount Pagan Volcano, Pagan Islands, Commonwealth of the Northern Mariana Islands.USGS Open-File Report 2006-1386.http://pubs.usgs.gov/of/2006/1386/of2006-1386_text.pdf

Water Resources

Cowardin, L. (1979). "Classification of Wetlands and Deepwater Habitats of the United States". USFWS. Retrieved from: http://www.fws.gov/wetlands/documents/classification-of-wetlands-and-deepwater-habitats-of-the-united-states.pdf

DoD. (2005). "Directive 4715.14: Operational Range Assessments". Retrieved from: http://www.dtic.mil/whs/directives/corres/pdf/471514p.pdf

Bearden, C., Chambers, D., Okano, R., Yuknavage, K. (2014). *Commonwealth of the Northern Mariana Islands Integrated 305(b) and 303(d) Water Quality Assessment Report.* Bureau of Environmental and Coastal Quality. Retrieved from: http://www.epa.gov/region9/water/tmdl/pacislands/cnmi-integrated-report-2014.pdf

Block, D. (2003). After the Bombs: Remediation of Explosives Contaminated Ecosystems in Vieques. *Student On-Line Journal*. Vol 8. No. 5. University of Minnesota.

Commonwealth of the Northern Mariana Islands. (2015) Northern Mariana Islands Administrative Code (NMIAC). Retrieved from http://www.cnmilaw.org/mediawiki-1.21.2/index.php?title=Main_Page

Denton, G.R.W., Emobrski, C.A., Habana, N.C., & Starmer, J.A. Influence of Urban Runoff, Inappropriate Waste Disposal Practices and World War II on the Heavy Metal Status of Sediments in the Southern Half of Saipan Lagoon, Saipan, CNMI. University of Guam, Water and Environmental Research Institute.

EPA. (2012). *EPA Federal Facilities Forum Issue Paper: Site Characterization for Munitions Constituents.* EPA 505-S-11-001. Retrieved from http://www2.epa.gov/sites/production/files/documents/site_characterization_for_munitions_constituents.pdf

Fujioka, R., Sian-Denton, C., Borja, M., Matson, E. (1996). *Applicability of New Marine Recreational Water Quality Standards in Guam*. WRRC Project completion Report WRRC-96-03. Prepared for EPA under Cooperative Agreement No. CR 820809-01-0.

Kromoredjo, P. & Fjuioka, R. (1991). Evaluating Three Simple Methods to Assess the Microbial Quality of Drinking Water in Indonesia. *Environmental Toxicology and Water Quality*. Vol 6. 259-270.

Labrière, N., Locatelli, B., Laumonier, Y., Freycon, V. (2015). Soil erosion in the humid tropics: A systematic quantitative reviw. *Agriculture, Ecosystems and Environment*. Vol. 203. 127-139.

Nshimyimana, J., Ekklesia, E., Shanahan, P., Chua, L., Thompson, J. (2014). Distribution and abundance of human-specific *Bacteroides* and relation to traditional indicators in an urban tropical catchment. *Journal of Applied Microbiology*. Vol 116: 1369-1383.

Pichtel, J. (2012) Distribution and Fate of Military Explosives and Propellants in Soil: A Review. *Applied and Environmental Soil Science*. Vol. 2012, ID 617236.

Rochelle-Newall, E., Nguyan, TMH., Le, TPQ., Sengtaheuanghoung, O., Ribolzi, O. (2015) A short review of fecal indicator bacteria in tropical aquatic ecosystems: knowledge gaps and future directions. *Frontiers in Microbiology*. Vol 6 (308).

Siegel, L. (2002). *Toxic Ranges*. Center for Public Environmental Oversight.

U.S. Census Bureau. (2013). 2010 Census of Population and Housing, Commonwealth of the Northern Mariana Islands.

Air Quality

AIHA. (2013). "Current ERPG Values (2013)". *ERPG/WEEL Handbook.* Retrieved from: https://www.aiha.org/get-involved/AIHAGuidelineFoundation/EmergencyResponsePlanningGuidelines/Documents/2013ERPGValues.pdf

CEQ. (2014). "Revised Draft Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews; Notice". *Federal Register*. Vol 79. No. 247.

EPA. (2014a). "AP 42, Fifth Edition, Volume I, Chapter 15: Ordnance Detonation".< http://www.epa.gov/ttn/chief/ap42/ch15/index.html>.

EPA. (2014b). "National Ambient Air Quality Standards (NAAQS)". <http://www.epa.gov/air/criteria.html>.

EPA. (2013) "What Is a Draft Section". Retrieved from: http://www.epa.gov/ttn/chief/ap42/whatisadraft.txt.

Federal Register, Vol 29, No 247. (2014). "Revised Draft Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews; Notice". <

http://energy.gov/sites/prod/files/2014/12/f19/CEQ%20Guidance%20on%20Greenhouse%20Gas%20Emissions%20-%20Revised%20Draft%20for%20Public%20Comment2014-30035.pdf>.

Lanphear, B.P. , Hornung, R. , Khoury, J. et al., (2005). Low-level environmental lead exposure and children's intellectual function: An international pooled analysis. *Environmental Health Perspectives*, Vol. 113, No. 7.

Nevin, R. (2007). Understanding international crime trends: the legacy of preschool lead exposure. *Environmental Research* .

NOAA. (2015a). "Emergency Response Planning Guidelines (ERPGs)". Retrieved from: http://response.restoration.noaa.gov/erpgs

NOAA. (2015b). "Workplace Exposure Limits". <http://response.restoration.noaa.gov/oil-and-chemical-spills/chemical-spills/resources/workplace-exposure-limits.html>.

Rehm, R., & Rush, T. Air Emissions from Range Operations. *Pacific Environmental Services.* http://www.epa.gov/ttn/chief/conference/ei12/poster/rehm.pdf

Sanders, Y. Liu, V. Buchner and P.B. Tchounwou, (2009) Neurotoxic Effects and Biomarkers of Lead Exposure: A Review. *Reviews on Environmental Health*. Vol. 24, No. 1.

Wright, JP, Dietrich, K.N., Ris M.D. (2008). Association of prenatal and childhood blood lead concentrations with criminal arrests in early adulthood, *PLoS Med*.

Noise

CDC. (2013). "About Hearing Loss". Retrieved from: http://www.cdc.gov/healthyyouth/noise/signs.htm

NIOSH. (1998). *Occupational Noise Exposure*. Publication Number 98-126. Retrieved from: http://www.cdc.gov/niosh/docs/98-126/

Terrestrial Biology

Fabricius, K. E. (2005). Effects of terrestrial runoff on the ecology of corals and coral reefs: review and synthesis. *Marine Pollution Bulletin*, 50(2), 125-146.

Rogers, C. S. (1990). Responses of coral reefs and reef organisms to sedimentation. Marine ecology progress series. *Oldendorf*, 62(1), 185-202.

Marine Biology

AASHTO Center for Environmental Excellence. (2008). "Designing for Environmental Stewardship in Construction & Maintenance: Designing to Minimize Noise". Retrieved from http://environment.transportation.org/environmental_issues/construct_maint_prac/compendium/manual/3_13.aspx

Brainard, R. E., C. Birkeland, C. M. Eakin, P. McElhany, M. W. Miller, M. Patterson, and G. A. Piniak. 2011. Status review report of 82 candidate species petitioned under the U.S. Endangered Species Act. NOAA Technical Memorandum NMFS-PIFSC-27. 530 pp

Erftemeijer, P. L., Riegl, B., Hoeksema, B. W., & Todd, P. A. (2012). Environmental impacts of dredging and other sediment disturbances on corals: a review. *Marine Pollution Bulletin*, *64*(9), 1737-1765.

Frisch, A. J. (2007). Short-and long-term movements of painted lobster (Panulirus versicolor) on a coral reef at Northwest Island, Australia. *Coral Reefs*, *26*(2), 311-317.

Islam, M. A., Lan-Wei, W., Smith, C. J., Reddy, S., Lewis, A., & Smith, A. (2007). Evaluation of satellite remote sensing for operational monitoring of sediment plumes produced by dredging at Hay Point, Queensland, Australia.*Journal of Applied Remote Sensing*, *1*(1), 011506-011506.

Kahng, S. E., Garcia-Sais, J. R., Spalding, H. L., Brokovich, E., Wagner, D., Weil, E., ... & Toonen, R. J. (2010). Community ecology of mesophotic coral reef ecosystems. *Coral Reefs*, *29*: 255-275

Kendal, M.S. and Poti, M. (eds) (2015). Transport pathways of marine larvae around the Mariana Archipelago. NOAA Technical Memorandum NOS NCCOS 193. Silver Spring, MD. 130 pp.

Littler MM, Littler DS, Blair SM, Norris JN (1985) Deepest known plant life discovered on an uncharted seamount. Science 227:57–59

Pollock, F. J., Lamb, J. B., Field, S. N., Heron, S. F., Schaffelke, B., Shedrawi, G., ... & Willis, B. L. (2014). Sediment and turbidity associated with offshore dredging increase coral disease prevalence on nearby reefs. *PloS one*,*9*(7), e102498.

Prouty N, Storlazzi C, McCutcheon A, Jenson J (2014) Historic impact of watershed change and sedimentation to reefs along west-central Guam. Coral Reefs.doi:10.1007/s00338-014-1166-x.

Socioeconomics and Environmental Justice

DoD. (1995). "Strategy on Environmental Justice". Retrieved from http://www.denix.osd.mil/references/upload/DoD-Environmental-Justice-Strategy-24-Mar-1995.pdf

EPA. (2012) "Environmental Justice – Basic Information". Retrieved from http://www.epa.gov/environmentaljustice/basics/index.html

Cumulative Effects

California Department of Transportation, U.S. Environmental Protection Agency, and the Federal Highway Administration. (2005). *Guidance for Preparers of Cumulative Impact Analysis: Approach and Guidance*. Retrieved fromhttp://www.dot.ca.gov/ser/cumulative_guidance/downloads/Approach_and_Guidance.pdf

CEQ. (1997). Considering Cumulative Effects. Retrieved from http://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-CEQ-ConsidCumulEffects.pdf