5.6 No-ACTION ALTERNATIVE

The 2010 ROD deferred selection of a specific site for an LFTRC on Guam. Consequently, under the No-Action Alternative for this SEIS, no LFTRC would be developed. The existing conditions would be unchanged and there would be no impacts to any of the resource areas under the No-Action Alternative in Chapter 5.

5.7 SUMMARY OF IMPACTS AND POTENTIAL MITIGATION MEASURES FOR THE LIVE-FIRE TRAINING RANGE COMPLEX ALTERNATIVES

Table 5.7-1 summarizes the impacts and potential mitigation measures for each LFTRC alternative evaluated in this chapter. Impacts include both construction and operation impacts. As discussed in Section 5.6, under the No-Action Alternative, the LFTRC would not be constructed and there would be no impacts to any of the resource areas discussed in this SEIS associated with the LFTRC. Thus, the No-Action Alternative is not presented in Table 5.7-1.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Geological and Soil Resource		,		
Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts
<u>Topography</u>	<u>Topography</u>	Topography	<u>Topography</u>	<u>Topography</u>
SI	LSI	SI	SI	SI
Major changes to surface	Because the elevation changes at	Major changes to surface	Major changes to surface	Major changes to surface elevation
elevation due to excavation and	Alternative 2 are smaller than	elevation due to excavation and	elevation due to excavation and	due to excavation and filling for
filling for construction of	those of the other alternatives,	filling for construction of	filling for construction of MPMG	construction of MPMG Range would
MPMG, MRF, KD ranges, and	less excavation, filling, and	MPMG, MRF, and KD ranges	and KD ranges would have a	have a significant, direct, long-term
realignment of Route 15 would	contouring would occur at	would have a significant, direct,	significant, direct, long-term	impact to topography.
have a significant, direct, long-	Alternative 2 so there would be	long-term impact to topography.	impact to topography.	
term impact to topography.	less alteration of the surrounding			Earthwork would include 2,047,295
E d LC LETTO C	landscape than at the other four	Earthwork would include	Earthwork would include	yd ³ (1,565,270 m ³) of cut and
Earthwork for LFTRC	alternatives. Therefore,	4,932,976 yd ³ (3,771,530 m ³) of	2,716,125 yd ³ (2,076,627 m ³) of	1,932,392 yd ³ (1,477,420 m ³) of fill.
Alternative 1 would include 2,488,676 yd ³ (1,902,730 m ³) of	Alternative 2 is expected to have	cut and 3,130,058 yd ³ (2,393,100 m ³) of fill.	cut and 2,767,463 yd ³ (2,115,878 m ³) of fill.	Alternative 5 would involve the
cut and 2,451,937 yd ³	a less than significant direct, long-term impact on topography.	m) 01 1111.	m) of fill.	second lowest amount of excavation
(1,874,640 m ³) of fill.	long-term impact on topography.	Alternative 3 would involve the	Alternative 4 would involve the	of all the alternatives (Alternative 3
(1,874,040 III) 01 IIII.	Earthwork would include	largest volume of excavation of	second largest volume of	would involve the greatest;
Alternative 1 would involve a	1,246,720 yd ³ (953,186 m ³) of	any of the alternatives.	excavation any of the alternatives	Alternative 2 would involve the least).
lower excavation volume than	cut and 1,254,698 yd ³ (959,286	any of the alternatives.	(Alternative 3 would involve the	Alternative 2 would involve the least).
Alternatives 3 and 4, and a	m ³) of fill.	Potential Mitigation Measures	greatest; Alternative 2 would	Potential Mitigation Measures
larger volume than Alternatives	iii) 01 iiii.	Similar to Alternative 1, i.e.,	involve the least).	Similar to Alternative 1, i.e.,
5 and 2 (Alternative 3 would	Alternative 2 would involve the	potential mitigation is not	involve the least).	potential mitigation is not
involve the greatest; Alternative	least volume of excavation of any	considered feasible and is not	Potential Mitigation Measures	considered feasible and is not
2 would involve the least).	of the alternatives.	proposed.	Similar to Alternative 1, i.e.,	proposed.
		proposedi	potential mitigation is not	proposedi
Potential Mitigation Measures			considered feasible and is not	
Potential mitigation is not			proposed.	
considered feasible for this			r r	
impact because smaller cut/fill				
volumes would not provide				
the necessary level surfaces				
for the referenced ranges and				
roadway.				
LSI	LSI	LSI	LSI	LSI
Minor changes in surface	Minor changes in surface	Minor changes in surface	Minor changes in surface	Minor changes in surface elevations
elevations due to excavation and	elevations due to excavation and	elevations due to excavation and	elevations due to excavation and	due to excavation and filling for the
filling for the HG Range would	filling for the HG Range would	filling for the HG Range would	filling for the HG Range would	HG Range would have direct, long-
have direct, long-term, less than	have direct, long- term, less than	have direct, long-term, less than	have direct, long-term, less than	term, less than significant impacts.
significant impacts.	significant impacts.	significant impacts.	significant impacts.	

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

		NAVMAC Need (See de		
Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Soils	Soils	Soils	Soils	Soils
LSI	LSI	LSI	LSI	LSI
Potential increase in	Direct, short-term impacts from	Direct, short-term impacts from	Direct, short-term impacts from	Direct, short-term impacts from
construction-related erosion	construction-related erosion at	construction-related erosion at	construction-related erosion at	construction-related erosion at
Alternative 1 and the HG Range	Alternative 2 and the HG Range	Alternative 3 and the HG Range	Alternative 4 and the HG Range	Alternative 5 and the HG Range
minimized through compliance	would be similar to Alternative 1.	would be similar to Alternative 1.	would be similar to Alternative	would be similar to Alternative 1. No
with 22 GAR, Chapter 10 Guam		No indirect short-term impacts	1. No indirect short-term impacts	indirect short-term impacts expected.
Soil Erosion and Sediment	No indirect short-term impacts	expected.	expected.	
Control Regulations and	expected at the HG Range and			There would be no stream re-routing
construction stormwater BMPs	Alternative 2.	Construction of Alternative 3	Construction of Alternative 4	involved with construction of
as per the Construction General		would involve stream re-routing.	would involve stream re-routing.	Alternative 5.
Permit, DoD Program SWPPP,	Construction of Alternative 2		D	
and project SWPPPs.	would involve stream re-routing.	Construction of the HG Range	Disturbance to unused prime	Construction of the HG Range would
	.	would be a less than significant,	farmland soils at Alternative 4	be a less than significant, direct, long-
There would be no stream re-	Disturbance to unused prime	direct, long-term impact to	would be an adverse, but less	term impact to agricultural soils.
routing involved with	farmland soils at Alternative 2	agricultural soils.	than significant direct long-term	
construction of Alternative 1.	would be an adverse, but less		impact to agricultural soils.	
T	than significant direct long-term	NI	G	NI
Less than significant direct,	impact.	No prime farmland is identified	Construction of the HG Range	No prime farmland is identified in the
short-term impacts to soils at	D	in the Alternative 3 development	would be a less than significant,	Alternative 5 development footprint.
Alternative 1 and the HG Range	Disturbance to minimally-used,	footprint. No direct or indirect	direct, long-term impact to	No direct or indirect impacts to
from erosion.	non-prime farmland soils at the	impacts to agricultural soils.	agricultural soils.	agricultural soils.
N. I. a. I. a. a.	HG Range would be a less than			
No indirect short-term impacts	significant, direct, long-term			
expected at Alternative 1 and	impact to agricultural soils.			
the HG Range.				
Minimalla and an anima				
Minimally-used, non-prime farmland soils would be				
disturbed at Alternative 1 and				
the HG Range.				
the HO Kange.				
Construction of Alternative 1				
and the HG Range would be a				
less than significant, direct,				
long-term impact to agricultural				
soils.				
50115.				

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West			NWF
		NAVMAG North/South	NAVMAG L-Shaped	
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Sinkholes	<u>Sinkholes</u>	Sinkholes	Sinkholes LSI	Sinkholes LSI
LSI	LSI	LSI		
Three features have been	HG Range: Impacts would be	Four features have been	Three features have been	Seven features have been
preliminarily identified as	similar to Alternative 1, since the	preliminarily identified as	preliminarily identified as	preliminarily identified as
sinkholes/depressions that may	location would remain the same.	sinkholes/depressions that may	sinkholes/depressions that may	sinkholes/depressions that may
contain sinkholes.	377	contain sinkholes.	contain sinkholes.	contain sinkholes.
No adverse impact at	NI	I 2 4 db	T	I f Alt f f d.h. IIC
Alternative 1 and the HG Range	There are no sinkholes in the	Impacts for Alternative 3 and the	Impacts for Alternative 4 and the	Impacts for Alternative 5 and the HG
with compliance with 22 GAR	volcanic bedrock underlying	HG Range would be similar to	HG Range would be similar to	Range would be similar to Alternative
Chapter 10 § 10106F.	Alternative 2. There would be no	Alternative 1.	Alternative 1.	1.
Chapter 10 § 101001.	direct or indirect short or long			
Less than significant direct,	term impacts.			
short-term impacts to sinkholes.				
Geologic Hazards	Geologic Hazards	Geologic Hazards	Geologic Hazards	Geologic Hazards
LSI	LSI	LSI	LSI	LSI
One major and one minor	One major bedrock fault crosses	One minor bedrock fault crosses	One minor bedrock fault crosses	Impacts for the LFTRC and HG
bedrock fault cross the	the Alternative 2 footprint.	the Alternative 3 footprint.	the Alternative 4 footprint.	Range areas would be similar to
Alternative 1 footprint. No				Alternative 1.
bedrock faults cross the HG	Impacts for Alternative 2 and the	Impacts for the Alternative 3 and	Impacts for Alternative 4 and the	
Range footprint.	HG Range would be similar to	the HG Range would be similar	HG Range would be similar to	Potential hazard to workers if USFWS
D. C.16 d. 1	Alternative 1.	to Alternative 1.	Alternative 1.	facilities are demolished would be
Potential for earthquake-				minimized with tsunami hazard
generated fault rupture/ground				communication and evacuation
shaking to cause structure				procedures.
damage and injury would be				
minimized with application of				
UFC 3-310-04 Seismic Design				
of Buildings dated June 1, 2013				
during design and construction.				
Compliance with 22 GAR				
Chapter 10 § 10106F would				
minimize potential geologic				
hazards associated with				
sinkholes. Therefore,				
construction of Alternative 1				
and the HG Range would result				
in less than significant direct				
and indirect short-term impacts				
associated with geologic				
hazards.				

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts
Topography NI No large scale grading and changes to elevation at Alternative 1 and the HG Range. No direct or indirect impacts. Soils LSI	Topography NI Impacts for Alternative 2 and the HG Range would be similar to Alternative 1, because operations at the proposed LFTRC site would not alter topography post construction. Soils LSI	Topography NI Impacts for the Alternative 3 and the HG Range would be similar to Alternative 1. Soils LSI	Topography NI Impacts for Alternative 4 and the HG Range would be similar to Alternative 1. Soils LSI	Topography NI Impacts for the Alternative 5 and the HG Range would be similar to Alternative 1. Soils LSI
There would be about 30 acres (12 ha) for Alternative 1 and about 1 acre (0.4 ha) for the HG Range of associated impervious surfaces. Potential for erosion associated with firing range operations at Alternative 1 and HG Range would be minimized by application of Marine Corps range management policies and procedures and preparing a Range Fire Management Plan. Potential for erosion from minimal surface disturbance for maintenance activities would be reduced by implementation of construction stormwater BMPs. With implementation of Marine Corps range management policies and procedures and stormwater BMPs (for ranges and utility maintenance), less than significant direct and indirect long-term impacts to soils from erosion would occur due to Alternative 1 and HG Range operations.	There would be about 29 acres (12 ha) for Alternative 2 and about 1 acre (0.4 ha) for the HG Range of associated impervious surfaces. Impacts from erosion associated with firing range operations at Alternative 2 and the HG Range would be similar to Alternative 1. Operation of the HG Range and Alternative 2 would have a less than significant direct, long-term impact to agricultural soils.	There would be about 20 acres (8 ha) for Alternative 3 and about 1 acre (0.4 ha) for the HG Range of associated impervious surfaces. Impacts from erosion associated with firing range operations at Alternative 3 and the HG Range would be similar to Alternative 1. Operation of the HG Range would be a less than significant, direct, long-term impact to agricultural soils. NI No prime farmland is identified in the Alternative 3 development footprint. No direct or long-term indirect impacts to agricultural soils.	There would be about 32 acres (13 ha) for Alternative 4 and about 1 acre (0.4 ha) for the HG Range of associated impervious surfaces. Impacts from erosion associated with firing range operations at Alternative 4 and the HG Range would be similar to Alternative 1. Operation of the HG Range and Alternative 4 would have a less than significant direct long-term impact to agricultural soils.	There would be about 29 acres (12 ha) for Alternative 5 and about 1 acre (0.4 ha) for the HG Range of associated impervious surfaces. Impacts from erosion associated with firing range operations at Alternative 5 and the HG Range would be similar to Alternative 1. Operation of the HG Range would have a less than significant, direct, long-term impact to agricultural soils. NI No prime farmland is identified in the Alternative 5 development footprint. No direct or long-term indirect impacts to agricultural soils.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Minimally-used, non-prime	((======================================	(======================================	(-2007)
farmland soils would be				
disturbed at Alternative 1 and				
the HG Range.				
Operation of Alternative 1 and				
HG Range would have a less				
than significant, direct, long-				
term impact to agricultural soils.				
Sinkholes	Sinkholes	Sinkholes	Sinkholes	Sinkholes
<u>LSI</u>	LSI	LSI	LSI	LSI
No adverse impact at	Impacts for the HG Range would	The impacts for the HG Range	The impacts for the HG Range	The impacts for the HG Range and
Alternative 1 and the HG Range	be similar to Alternative 1.	and Alternative 3 would be	and Alternative 4 would be	Alternative 5 would be similar to
sites with compliance with 22		similar to Alternative 1.	similar to Alternative 1.	Alternative 1.
GAR Chapter 10 § 10106F.	NI .			
	There are no sinkholes in the			
Operation of Alternative 1 and	volcanic bedrock underlying			
the HG Range would have less	Alternative 2, so operation would			
than significant direct, long-	have no direct or indirect long-			
term impacts to sinkholes.	term impacts to sinkholes.			
Geologic Hazards	Geologic Hazards	Geologic Hazards	Geologic Hazards	Geologic Hazards
LSI	LSI	LSI	LSI	LSI
Minimal hazards associated	Minimal hazards associated with	Minimal hazards associated with	Minimal hazards associated with	Minimal hazards associated with slope
with slope instability and liquefaction.	slope instability and liquefaction.	slope instability and liquefaction.	slope instability and liquefaction.	instability and liquefaction.
ilqueraction.	Minimal potential for	Minimal potential for earthquake-	Minimal potential for	Minimal potential for earthquake-
Minimal potential for	earthquake-generated fault	generated fault rupture and	earthquake-generated fault	generated fault rupture and ground
earthquake-generated fault	rupture and ground shaking to	ground shaking to cause structure	rupture and ground shaking to	shaking to cause structure damage and
rupture and ground shaking to	cause structure damage and	damage and injury due to use of	cause structure damage and	injury due to use of UFC 3-310-04
cause structure damage and	injury due to use of UFC 3-310-	UFC 3-310-04 Seismic Design of	injury due to use of UFC 3-310-	Seismic Design of Buildings dated
injury due to use of UFC 3-310-	04 Seismic Design of Buildings	Buildings dated June 1, 2013	04 Seismic Design of Buildings	June 1, 2013 during design and
04 Seismic Design of Buildings	dated June 1, 2013 during design	during design and construction.	dated June 1, 2013 during design	construction.
dated June 1, 2013 during	and construction.		and construction.	
design and construction.		Less than significant direct, long-		Less than significant direct, long-term
T (1 ' 'C' ' ' ' '	Less than significant direct, long-	term hazards associated with	Less than significant direct, long-	hazards associated with sinkholes due
Less than significant direct,	term hazards associated with	sinkholes due to implementation	term hazards associated with	to implementation of sinkhole BMPs.
long-term hazards associated	sinkholes due to implementation	of sinkhole BMPs.	sinkholes due to implementation	
with sinkholes due to	of sinkhole BMPs at the HG		of sinkhole BMPs.	Less than significant direct and
implementation of sinkhole BMPs.	Range.	Less than significant direct and		indirect long-term impacts associated
DIVIPS.	Less than significant direct and	indirect long-term impacts	Less than significant direct and	with geologic hazards.
Less than significant direct and	indirect long-term impacts	associated with geologic hazards.	indirect long-term impacts	

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

	Die 5.7-1. Summary of Impac	0		
Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
indirect long-term impacts	associated with geologic hazards.		associated with geologic hazards.	
associated with geologic				
hazards.				
Water Resources				
Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts
Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
NI	LSI	LSI	LSI	NI .
No surface waters are located	Potential short-term increase in	Potential short-term increase in	Potential short-term increase in	Same as Alternative 1.
within or near the construction	stormwater runoff and associated	stormwater runoff and associated	stormwater runoff and associated	
area. There would be no	pollutants during construction	pollutants during construction	pollutants during construction	
significant direct or indirect	could have indirect effects on	could have indirect effects on	could have indirect effects on	
short-term impacts to surface	surface water features. Short-	surface water features. Short-term	surface water features. Short-	
water.	term direct impacts would occur	direct impacts to up to 2 streams.	term direct impacts to up to 7	
	to up to 5 streams due to	Impacts as well as compliance	streams. Impacts as well as	
	construction activities within and	and minimization measures	compliance and minimization	
	adjacent to surfaces waters.	would be similar as Alternative 2.	measures would be similar as	
	However, through compliance		Alternative 2.	
	with the Construction General			
	Permit and implementation of SWPPPs and associated erosion			
	control, runoff reduction, and sediment removal BMPs, these			
	effects would be minimized.			
Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
LSI	LSI	LSI	LSI	LSI
Potential for stormwater to	Minor potential for stormwater to	Groundwater is primarily in the	Similar to Alternatives 2 and 3,	Similar to Alternative 1, there would
reach NGLA. Stormwater	reach local aquifers (not the	low-permeability volcanic rocks	since the Alternative 4 project	be a potential for stormwater to reach
runoff and sinkhole protection	NGLA). Stormwater runoff	in the area. Impacts and	area (not including the HG	NGLA. Stormwater runoff and
measures would serve to protect	protection measures would serve	avoidance measures would be	Range) overlaps the Alternatives	sinkhole protection measures would
groundwater quality, resulting	to protect groundwater quality,	similar to Alternative 2.	2 and 3 project areas.	serve to protect groundwater quality,
in less than significant direct or	resulting in less than significant	similar to riteritative 2.	2 and 3 project areas.	resulting in less than significant direct
indirect short-term impacts.	short-term impacts.			or indirect short-term impacts.
Nearshore Waters	Nearshore Waters	Nearshore Waters	Nearshore Waters	Nearshore Waters
NI	NI	NI	NI	NI
Stormwater runoff from the	Stormwater runoff from the	Same as Alternative 2.	Same as Alternative 2.	The project area would be
project area would not enter	project area would occur more			approximately 0.04 mile (0.06 km)
nearshore waters.	than 1 mile (1.6 km) inland from			from nearshore waters, and would
	the coastline and would not cause			cause no impact due to compliance
	indirect impacts to nearshore			with the Construction General Permit
	waters in Talofofo Bay.			and implementation of SWPPPs.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Wetlands	Wetlands	Wetlands	Wetlands	Wetlands
\overline{NI}	SI-M	SI-M	SI-M	NI
No wetlands are located within	Direct long-term impact to up to	Direct impact to up to 37 acres	Direct impact to up to 25 acres	No wetlands are located within or near
or near the construction areas.	18 acres (7 ha) of potentially	(15 ha) of potentially	(10 ha) of potentially	the construction areas.
	jurisdictional wetland areas due	jurisdictional wetland areas	jurisdictional wetland areas	
	to proposed cut and fill of	would result in long-term, direct	would result in long-term, direct	
	wetlands associated with the	impacts at the MPMG and KD	impacts at the MPMG and KD	
	Sarasa and Malaja rivers. As	Rifle ranges and range roads. As	Rifle ranges and range roads. As	
	required under the Section 404	required under the Section 404	required under the Section 404	
	permitting process, a mitigation	permitting process, a mitigation	permitting process, a mitigation	
	plan would be prepared.	plan would be prepared.	plan would be prepared.	
	Alternative 2, although	Alternative 3 would have the	Alternative 4, although	
	significant, would have less of an	greatest impact to wetlands,	significant, would have less of an	
	impact to wetlands than	compared to all LFTRC	impact to wetlands than	
	Alternatives 3 or 4.	alternatives.	Alternative 3.	
	Potential Mitigation Measures			
	If LEDPA, a Section 404	Potential Mitigation Measures	Potential Mitigation Measures	
	permit would be obtained for	Same as Alternative 2.	Same as Alternative 2.	
	unavoidable impacts to			
	jurisdictional wetlands. Direct			
	impacts would be mitigated by			
	creating new wetlands,			
	restoring or enhancing existing			
	wetlands, or preserving existing			
	wetlands areas on Guam to, at			
	a minimum, replace the area			
	filled. LSI	LSI	LSI	
	Potential increase in stormwater	Similar to Alternative 2, resulting	Similar to Alternative 2 resulting	
	runoff and associated pollutants	in short-term, indirect impacts.	in short-term, indirect impacts.	
	could have indirect effects on	in short term, maneet impacts.	in short term, maneet impacts.	
	wetlands. These short-term,			
	indirect impacts would be			
	minimized through the			
	Construction General Permit and			
	implementing BMPs to			
	reduce/prevent site- and activity-			
	specific stormwater runoff			
	protection requirements.			

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts
Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
NI .	LSI	LSI	LSI	NI
No surface waters are located	Increase in stormwater intensity	Potential impacts (including to	Potential impacts (including to	Same as Alternative 1.
within or near the project area	and volume and increase in	Fena Valley Reservoir) and	Fena Valley Reservoir) and	
and the implementation of LID	training-related residual	impact minimization measures	impact minimization measures	
and range management BMPs	contaminants. The potential for	would be similar to Alternative 2,	would be similar to Alternative	
would ensure that there would	increase in wildland fires leading	except that the potential for	2, except that the potential for	
be no increase in off-site	to increased erosion is highest in	wildland fires would be smaller.	wildland fires would be smaller	
transport of excess runoff,	Alternative 2, compared to the		in the portion of the project area	
sediment, or pollutants for up to	other two NAVMAG		on NAVMAG land.	
the 25-year storm event.	alternatives. Impacts to the water			
	quality of Fena Valley Reservoir			
	from projectiles would be			
	negligible. Stormwater runoff would be minimized through LID			
	measures and BMPs for			
	managing stormwater runoff at			
	firing ranges. Appropriate fire			
	suppression and mitigation			
	measures would be incorporated			
	into the design and range			
	operating procedures.			
Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
LSI	LSI	LSI	LSI	LSI
Minor increase in localized	Minor potential for stormwater to	Similar to Alternative 2 resulting	Similar to Alternative 2 resulting	Similar to Alternative 1, resulting in
recharge rates and in pollutant	reach local aquifers (not the	in less than significant long-term,	in less than significant long-term,	less than significant long-term, direct
loading potential to the NGLA.	NGLA).	direct impacts.	direct impacts.	or indirect impacts.
Nearshore Waters	Nearshore Waters	Nearshore Waters	Nearshore Waters	Nearshore Waters
NI	NI .	NI .	NI .	NI .
Stormwater runoff from the	Stormwater runoff from the	Similar to Alternative 2.	Similar to Alternative 2.	Similar to Alternative 2.
project area would not enter	project area would not cause			
nearshore waters. Potential	indirect impacts to nearshore			
impacts to nearshore water	waters in Talofofo Bay.			
quality from SDZ would be				
negligible.				

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Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Wetlands NI No wetlands are located within or near the project area. Air Quality	Wetlands LSI Potential minor increase in stormwater runoff and associated pollutants could have long-term, direct or indirect effects on wetlands. Stormwater runoff protection methods (i.e., LID, BMPs, and pollution prevention plans) would reduce potential impacts.	Wetlands LSI Similar to Alternative 2, resulting in less than significant long-term, direct or indirect impacts.	Wetlands LSI Similar to Alternative 2 resulting in less than significant long-term, direct or indirect impacts.	Wetlands NI No wetlands are located within or near the project area.
Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts
LSI Construction phase increase in emissions would be below the impact significance threshold of 250 tpy. The annual on-site and off-site PM emission levels would be much less than the worst-case alternative (Alternative A), for which a hot-spot impact modeling was conducted. PM impacts from Alternative 1 would be much less than Alternative A and would be result in less than significant, direct, short-term PM impacts during construction.	LSI Similar to Alternative 1, with the exception of the proposed site location. The predicted construction activity annual emissions would be the same as Alternative 1, and the hot-spot impacts during construction would be similar to Alternative 1, resulting in less than significant short- and long-term hot spot air quality impacts.	LSI Similar to Alternative 1, with the exception of the proposed site location. The predicted construction activity annual emissions would be the same as Alternative 1, and the hot-spot impacts during construction would be similar to Alternative 1, resulting in less than significant short- and long-term hot spot air quality impacts.	LSI Similar to Alternative 1, with the exception of the proposed site location. The predicted construction activity annual emissions would be the same as Alternative 1, and the hot-spot impacts during construction would be similar to Alternative 1, resulting in less than significant short- and long-term hot spot air quality impacts.	LSI Similar to Alternative 1, with the exception of the proposed site location. The predicted construction activity annual emissions would be the same as Alternative 1, and the hotspot impacts during construction would be similar to Alternative 1, resulting in less than significant shortand long-term hot spot air quality impacts.
Coperation Impacts LSI The on-road vehicle emissions under Alternative 1 would be substantially less than either of the modeled worst-case alternatives (Alternatives A and D). On-road hot-spot impacts during operation of Alternative 1 would result in less than significant, direct, long-term hot-spot air quality impacts.	Coperation Impacts LSI The hot-spot impacts during operation would be similar to Alternative 1, resulting in less than significant short- and long-term hot spot air quality impacts.	Coperation Impacts LSI The hot-spot impacts during operation would be similar to Alternative 1, resulting in less than significant short- and long-term hot spot air quality impacts.	Coperation Impacts LSI The hot-spot impacts during operation would be similar to Alternative 1, resulting in less than significant short- and long-term hot spot air quality impacts.	Operation Impacts LSI The hot-spot impacts during operation would be similar to Alternative 1, resulting in less than significant shortand long-term hot spot air quality impacts.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Noise	(Michianic 2)	(Hiternative 3)	(2111071111170-4)	(Michael S)
Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts
Construction Impacts LSI Graders and scrapers would be approximately 67 dB at the nearest receptor. Construction would be short-term and noise would not exceed construction noise level standards. The direct, short-term noise impacts would be less than significant. Operation Impacts SI-M Noise levels would exceed land use guidance and create a direct, long-term, significant impact from the sound exposure to nearby residences. An estimated 88 people (22 homes) would be affected in Noise Zone 2 (65-74 dB) and no people would be affected in Zone 3 (greater than 75 dB). Alternative 1 is the only alternative that would result in potentially significant impacts. Potential Mitigation Measures Using sound berms and foliage can reduce the levels to below significance. If this alternative is chosen for implementation, a detailed noise reduction plan would be developed to reduce impacts	Construction activities would be in an unpopulated area of Guam, and construction areas would be at least 1 mile (1.6 km) away from the nearest receptors. Operation Impacts NI Noise levels would not create a significant sound exposure because no residential areas are within Noise Zones 1, 2, or 3. No homes, residents, or other sensitive receptors would be affected. There would be no impacts from the HG Range, for the same reason as Alternative 1.	Construction Impacts NI Construction activities would be in an unpopulated area of Guam, and construction areas would be approximately 0.25 mile (0.4 km) away from the nearest receptors. Operation Impacts NI Noise levels would not create a significant sound exposure because no residential areas are within Noise Zones 2 or 3. Approximately 70-80 homes along Route 12 would experience noise levels between 55-60 dB, and 100 homes in Agat near the Pagachao Guam House and Urban Renewal Authority Housing Area would experience noise levels between 55-68 dB; however, noise exposure at this level is considered compatible for residential use, and the actual noise may be reduced due to existing topography and vegetation. There would be no impacts from the HG Range, for the same reason as Alternative 1.	Construction Impacts NI Construction activities would be in an unpopulated area of Guam, and construction areas would be approximately 0.25 mile (0.4 km) away from the nearest receptors. Operation Impacts NI Similar to Alternatives 2 and 3 combined. No houses lie within the Zone 2 or 3 noise contours, and the same number of homes fall within the 55-68 dB noise range as in Alternative 3. There would be no impacts from the HG Range, for the same reason as Alternative 1.	Construction Impacts NI Construction activities would be within the NWF at AAFB, and away from any sensitive receptors. Operation Impacts NI Similar to Alternative 2, no homes, residents, or sensitive receptors would be within Noise Zones 2 or 3, and there are only uninhabited homes near Jinapsan Beach, under Noise Zone 1. There would be no impacts from the HG Range, for the same reason as Alternative 1.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
NI	(11001100110 2)	(1200110001100)	(Hateritative 1)	(Internative o)
No residents would be affected				
by the noise from the HG				
Range, because all of the HG				
Range noise contours remain				
within Andersen South.				
Airspace				
Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts
NI .	NI NI	NI NI	NI NI	NI NI
No changes to airspace would	Same as Alternative 1.			
occur as a result of construction				
activities, and construction				
activities would not be expected				
to conflict or interfere with the				
use or management of existing				
airspace; therefore, there would				
be no impacts to airspace.				
Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts
Civilian Air Traffic	Civilian Air Traffic	Civilian Air Traffic	Civilian Air Traffic	Civilian Air Traffic
SI-M	SI-M	SI-M	SI-M	LSI
Operational activities have the	Operational activities have the	Operational activities have the	Operational activities have the	Alternative 5 is more removed from
potential for significant impacts to civilian aviation; however, if	potential for significant impacts to civilian aviation. Studies	potential for significant impacts to civilian aviation. Studies	potential for significant impacts to civilian aviation. Studies	Guam International airspace than Alternatives 1-4 and based on FAA's
this alternative is selected	identified potential issues to	identified potential issues to	identified potential issues to	review and the OPNAV assessment;
potential impacts and mitigation	aviation within the following:	aviation within the following:	aviation within the following:	this alternative would have less than
would be further studied	Guam International airspace and	Guam International airspace and	Guam International airspace and	significant impacts to civilian aviation
through the DON/FAA/Air	instrument approach procedures,	instrument approach procedures,	instrument approach procedures,	and the national airspace system.
Force consultation process.	Standard Instrument Departures	Standard Instrument Departures	Standard Instrument Departures	Military Air Traffic
Studies identified potential	and Standard Terminal Arrivals,	and Standard Terminal Arrivals.	and Standard Terminal Arrivals,	Alternative 5 would have potentially
issues to aviation within the	IFR/VFR traffic flows and	IFR/VFR traffic flows and	IFR/VFR traffic flows and	significant impacts to military air
following:	terminal operations. However, if	terminal operations. However, if	terminal operations. However, if	operations in and around Andersen
Guam International airspace and	this alternative is selected,	this alternative is selected,	this alternative is selected,	AFB that require deconfliction.
instrument approach procedures,	potential impacts and mitigation	potential impacts and mitigation	potential impacts and mitigation	_
Standard Instrument Departures	would be further studied through	would be further studied through	would be further studied through	Summary
		the DON/FAA/Air Force	the DON/FAA/Air Force	Operational impacts under Alternative
and Standard Terminal Arrivals,	the DON/FAA/Air Force			operational impacts under internative
IFR/VFR traffic flows and	the DON/FAA/Air Force consultation process.	consultation process.	consultation process.	5 would be the least of all alternatives
IFR/VFR traffic flows and terminal operations, known but	consultation process.	consultation process.	consultation process.	5 would be the least of all alternatives but some mitigation would still be
IFR/VFR traffic flows and terminal operations, known but uncharted high volume routes,	consultation process. Military Air Traffic	consultation process. Military Air Traffic	consultation process. Military Air Traffic	5 would be the least of all alternatives
IFR/VFR traffic flows and terminal operations, known but	consultation process.	consultation process.	consultation process.	5 would be the least of all alternatives but some mitigation would still be

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Final

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Reporting Points.	Summary	Summary	Summary	Potential Mitigation Measures
	Operational impacts under	Operational impacts under	Operational impacts under	Same as Alternative 1.
Military Air Traffic	Alternative 2 would be the same	Alternative 3 would be the same	Alternative 4 would be the same	
No impact.	as Alternatives 1, 3, and 4; and	as Alternatives 1, 2, and 4; and	as Alternatives 1, 2, and 3; and	
	greater than Alternative 5.	greater than Alternative 5.	greater than Alternative 5.	
Summary				
Operational impacts under	Potential Mitigation Measures	Potential Mitigation Measures	Potential Mitigation Measures	
Alternative 1 would be the same	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.	
as Alternatives 2, 3, and 4; and				
greater than Alternative 5.				
December 1182 and 18				
Potential Mitigation Measures The general types of				
The general types of mitigation measures that				
could be employed may				
include adjusting airspace				
through FAA coordination.				
However, no specific				
mitigation measures are				
proposed at this time.				

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Land and Submerged Land	,	(1200110001000)	(11001100010 1)	(Internative o)
Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts
NI	NI	NI	NI	NI
There would be changes to land	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
use initiated during				
construction; however, all				
changes in land use are				
considered long-term				
operational impacts. Therefore,				
there is no construction-phase analysis for this resource. See				
operational impacts.				
Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts
Loss of Valued Use	Loss of Valued Use	Loss of Valued Use	Loss of Valued Use	Loss of Valued Use
SI	SI	NI	SI	NI
Long-term direct impact from	Direct and long-term impact from	No loss of a land use valued by	Similar to Alternative 2, there	The land use within the Ritidian Unit
loss of a unique community-	restricted access to a portion of	the community.	would be a direct and long-term	of the NWR encumbered by SDZs
valued land use, the Guam	the Bolanos Conservation Area.		impact from restricted access to a	would remain Conservation.
International Raceway.		LSI	portion of the Bolanos	
An existing quarry within the	Alternative 2 would have the	Indirect, long-term, less than	Conservation Area.	
proposed LFTRC would be	same level of impacts due to loss of valued lands as Alternatives 1	significant impact to agricultural lands, because there are no prime	Alternative 4 would have the	
precluded from continuing	and 4.	farmlands within the acquisition	same level of impacts due to loss	
operations resulting in a long-	and 4.	area, and less than 1% of the total	of valued lands as Alternatives 1	
term impact to an existing land	Potential Mitigation Measures	important farmlands on Guam are	and 2.	
use.	DoD would work with	within the acquisition area.		
A16 2 1 111 4	GovGuam to develop a plan to	Additionally, farmlands identified	Potential Mitigation Measures	
Alternative 1 would have the same level of impacts due to	balance the loss of conservation	within the area are not currently	Same as Alternative 2.	
loss of valued lands as	land use and access with the	in agricultural use.		
Alternatives 2, 4, and 5.	operational needs and public			
, , , , , , , , , , , , , , , , , , ,	safety concerns.			
Potential Mitigation Measures				
The CLTC license that allows				
the raceway to operate at the				
present location expires in				
2018. It is unknown if the license would be renewed				
irrespective of the proposed				
action, no potential mitigation				
measure has been identified.				

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
LSI	LSI	(Autimutive 3)	LSI	NI
Direct, long-term, less than	Indirect, long-term, less than		Indirect, long-term, less than	No impact to agricultural lands.
significant impact due to loss of	significant impact due to loss of		significant impact due to loss of	To impact to agricultural lands.
subsistence farming acreage in	prime and important farmlands		prime and important farmlands	
an area that is not designated for	identified within the area, but not		identified within the area, but not	
agriculture.	currently in agricultural use.		currently in agricultural use.	
Public Access	Public Access	Public Access	Public Access	Public Access
SI	SI-M	\overline{NI}	SI-M	SI
Long-term impact from new	Long-term loss of access to the	No long-term impact related to	Similar to Alternative 2, there	Although the land and submerged land
public access restrictions on	portion of the Bolanos	access to Mount Lamlam or	would be a long-term loss of	use within the Ritidian Unit of the
GovGuam submerged lands.	Conservation Area within the	Mount Jumullong.	access to the portion of the	NWR would remain as Conservation
DoD would provide access to	acquisition area.		Bolanos Conservation Area	land use, there would be access
submerged lands to the extent			within the acquisition area.	restrictions to the land and submerged
possible.	Potential Mitigation Measures			lands within the SDZs. Such
	DoD would work with		Potential Mitigation Measures	restrictions would be limited to the
Potential Mitigation Measures	GovGuam to develop a plan to		Same as Alternative 2.	minimum SDZ area and period of use
No mitigation measures have	balance the loss of conservation			required for the LFTRC. Access to
been identified that would	land use and access with the			non-NWR submerged lands under the
reduce the significance of this	operational needs and public			custody and control of the DON
impact to a less than	safety concerns.			would be similarly restricted. The
significant level.				DON would pursue an agreement with
				the USFWS in accordance with the
				provisions of Section 2822 of the FY
				2015 NDAA to ensure that access
				restrictions to the Ritidian Unit are
				consistent with the purposes for which
				the Unit was established. New beach
				access is proposed near the relocation
				of the USFWS facilities to partially offset the impact of proposed
				restrictions on beach access within the
				SDZ.
				SDE.
				Potential Mitigation Measures
				No mitigation measures have been
				identified.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
NI	NI	, , ,	NI	NI .
No impact on access to the	No additional public access		No additional public access	No impact on private property access.
Pågat Trail and related cultural	restrictions on public access to		restrictions on public access to	Route 3A conditions would be
sites.	Mount Lamlam or Mount		Mount Lamlam or Mount	improved resulting in a beneficial
	Jumullong.		Jumullong.	impact to public access.
Compatibility with Current and	Compatibility with Current and	Compatibility with Current and	Compatibility with Current and	Compatibility with Current and Future
<u>Future Use</u>	<u>Future Use</u>	<u>Future Use</u>	<u>Future Use</u>	<u>Use</u>
SI	LSI	LSI	LSI to NI	NI
There would be short- and long-	Long-term compatibility issues	Indirect, long-term impact from	Similar to Alternative 3, with	The LFTRC noise Zone 2 would
term direct and indirect impacts	within NAVMAG regarding	loss of designated important	regard to agricultural lands, long-	extend slightly into private properties
from the LFTRC land use being	existing and planned land uses	farmland. Land is not currently in	term compatibility issues, and	east of the LFTRC but there would be
incompatible with existing and	would be resolved through the	agricultural use.	the HG Range noise contours.	no impact to land use. The private
future residential land uses	implementation of installation			land southwest of the LFTRC would
within the noise Zone 2 and 3	master planning guidelines.			not be affected by Zone 2 noise
contours.	LSI/BI	LSI	LSI/BI	contours.
There would be a direct, short-	The proposed access road increases	Long-term compatibility issues	The proposed access road	The HG Range noise Zone 2 and 3
and long-term significant impact	public access to remote areas, so	within NAVMAG regarding	increases public access to remote	contours would not extend off-base.
associated with new restrictions	could be perceived as beneficial or	existing and planned land uses	areas could be perceived as	contours would not extend our-base.
on public access to the coastal	adverse direct and long-term	would be resolved in SEIS master	beneficial or adverse direct and	No new utility or access road
and submerged lands	impact on adjacent land uses.	planning processes.	long-term impact on adjacent	easements would be acquired.
encumbered by the SDZs	impact on adjacent tand uses.	praiming processes.	land uses.	casements would be acquired.
generated by LFTRC operations.	NI NI	NI NI		No impact from relocation of USFWS
8	The HG Range noise Zone 2 and 3	The HG Range noise Zone 2 and		facilities.
The significance of land use	contours would not extend off-	3 contours would not extend off-		
impacts resulting from	base, so would not impact existing	base. LFTRC Zone 3 contours		
implementation of Alternative 1	or proposed residential land uses.	would not extend off-base. Zone		
would be similar to that of		2 noise contours would extend		
Alternatives 2, 4 and 5;	LFTRC noise levels would be	off-base and would be compatible		
Alternative 3 is the only LFTRC	compatible with surrounding	with surrounding designated		
alternative with no significant	designated Agriculture land use.	Agriculture land use.		
impact land use impact.				
D		No new utility or access road		
Potential Mitigation Measures		easements would be acquired.		
Non-DoD action, including				
GovGuam updates to future				
community land use plans to address proposed DoD land				
uses.				
uses.				

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
DoD coordination with				
GovGuam on military noise				
and hazard area information				
derived from Joint Land Use				
Studies or Range/AICUZ plans or other studies to inform				
future GovGuam zoning or				
land use decisions and				
minimize the potential for				
incompatible public or private				
development near military				
installations.				
A detailed noise reduction plan would be prepared that would				
address impacts to exiting land				
uses.				
LSI				
Any compatibility issues from				
the HG Range, regarding				
existing and planned land uses,				
would be resolved through				
application of installation				
master planning guidelines and land use impacts to Andersen				
South would be indirect, short-				
term, and less than significant.				
,				
Impacts to farming would be				
direct and long-term but less				
than significant, because the				
planned acquisition area does not include agricultural land				
uses.				
NI				
The HG Range noise Zone 2				
and 3 contours would not extend				
off-base, so would not impact				
existing or proposed residential				
areas.				

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
No new utility or access road	(Michael 2)	(Michael S)	(Michael 4)	(Hiternative 3)
easements would be acquired.				
1				
There would be no land use				
impact on the Pacific				
International quarry land use.				
Recreational Resources				
Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts
SI	LSI	LSI	LSI	LSI
Direct long-term impact from	Short-term, direct impacts from	Similar to Alternative 2.	Similar to Alternative 2.	Construction-related vehicles
permanent closure of the Guam	slowed access to recreational			travelling along Route 3A would
International Raceway.	resources due to use of public roads by construction vehicles.			potentially cause a less than significant adverse impact due to
Alternative 1 would have the	roads by construction vehicles.			traffic congestion and delays to
most substantial impacts to				persons attempting to gain access to
recreational resources,				the Ritidian Unit.
compared to the other LFTRC				
alternatives.				NI
				The Guam NWR Nature Center would
Potential Mitigation Measures				be replaced at a location outside the
The CLTC license that allows				SDZs prior to the construction of the
the raceway to operate at the				LFTRC. The existing center would be
present location expires in 2018. Since it is unknown if				utilized until the new center becomes operational. This would ensure
the license would be renewed				uninterrupted visitor use of the center
irrespective of the proposed				during the construction period, and
action, no mitigation measure				yield no direct or indirect adverse
has been identified.				impacts to recreational resources.
LSI				
Short-term direct impact from				
slowed access to recreational				
resources with use of public				
roads by construction vehicles.				

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts
Direct and long-term impact from the loss of a unique community-valued recreational resource, the Guam International Raceway. Potential Mitigation Measures No mitigation measures have been identified. SI Direct and long-term impact from SDZs extending over the Poent cultural site.	LSI There are no identified recreational resources in those areas that would be directly or indirectly affected by land acquisition.	LSI There are no identified recreational resources in those areas that would be directly or indirectly affected by land acquisition.	LSI Recreational resources directly affected by the SDZs include Mount Alifan Unit, Japanese Lookout, Almagosa Springs, and Dobo Springs within the NAVMAG property. However, there are fewer recreational resources within the area to be acquired, leading to a direct and long-term but less than significant impact.	Direct impacts to public access to recreational resources within the SDZ when ranges are in use. Access within the range SDZ would be restricted during range operational periods. Impacts of loss of access to the portion of the Ritidian Unit trails, caves and other cultural resources within the range SDZ would be significant. Potential Mitigation Measures No mitigation measures have been identified
Pågat Point cultural site, impeding the public's access to this archaeological area during Marine Corps training. Potential Mitigation Measures No mitigation measures have been identified.			LSI Potential indirect, long-term, less than significant impacts from firing range noise on recreational resources in the area.	LSI Long-term direct impacts from restricted access to popular dive spots and fishing zones for the public when ranges are being used. There would be limitations on access to hiking and cave exploring as well. Access to these areas would be restricted during operation of the LFTRC. However, the DON would pursue an agreement with USFWS in accordance with the provisions of Section 2822 of the FY 2015 NDAA to ensure that access restrictions to the Ritidian Unit of the Guam NWR are consistent with the purposes for which the Unit was established. Access to the Ritidian Unit during those periods when the ranges are not in use is a matter under the management authority of the USFWS. Recreational boat users would have to avoid the SDZ when the range is

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

		ts and Potential Mitigation N		
Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
				active or travel around the SDZ when
				they have to navigate through the area
				to reach their destination. Boaters and
				fishermen would be able to contact
				range control via radio or phone to get
				real time updates of active ranges,
				which would minimize conflicts.
NI				
Pågat Village, Cave, and Trail				
would not be impacted.				
Terrestrial Biological Resour				1
Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts
Vegetation	Vegetation	Vegetation	Vegetation	Vegetation
SI-M	LSI	SI-M	SI-M	SI-M
Conversion of 255 acres (103	Conversion of 19 acres (8 ha) of	Conversion of 169 acres (68 ha)	Conversion of 131 acres (53 ha)	Conversion of 219 acres (89 ha) of
ha) of limestone forest to	limestone forest and 39 acres (16	of limestone forest and 58 acres	of limestone forest and 62 acres	limestone forest to developed area.
developed area, which is the	ha) of ravine forest to developed	(23 ha) of ravine forest to	(25 ha) of ravine forest to	D
greatest of all alternatives.	area.	developed area.	developed area.	Potential Mitigation Measures
Detected Midienties Menses		D-44-1 Midi4 M	Datastial Mitigation Manager	Forest enhancement on a minimum
Potential Mitigation Measures Forest enhancement on a		Potential Mitigation Measures Forest enhancement on a	Potential Mitigation Measures Forest enhancement on a	of 219 acres (89 ha) of limestone forest.
minimum of 255 acres (103		minimum of 227 acres (92 ha)	minimum of 193 acres (78 ha)	iorest.
ha) of limestone forest.		of limestone forest.	of limestone forest.	
Terrestrial Conservation Areas	Terrestrial Conservation Areas	Terrestrial Conservation Areas	Terrestrial Conservation Areas	Terrestrial Conservation Areas
NI	NI	SI-M	SI-M	SI-M
None present	Overlay Refuge, Bolanos	Conversion of 275 acres (111 ha)	Conversion of 219 acres (88 ha)	Conversion of 298 acres (121 ha) of
Trone present	Conservation Area - no ground-	of Overlay Refuge lands to	of Overlay Refuge lands to	Overlay Refuge lands to developed
	disturbing activities; only SDZs	developed area.	developed area.	area.
	overlap Overlay Refuge lands	1	T	
	and Bolanos Conservation Area.	Potential Mitigation Measures	Potential Mitigation Measures	Potential Mitigation Measures
	Implementation of BMPs would	Submit a proposal to	Submit a proposal to	Submit a proposal to designate
	avoid and minimize impacts.	designate an ERA on	designate an ERA on	an ERA on NAVMAG.
		NAVMAG.	NAVMAG.	Submit a proposal for the
		 Submit a proposal for the 	Submit a proposal for the	expansion of Orote Peninsula
		expansion of Orote	expansion of Orote	ERA.
		Peninsula ERA.	Peninsula ERA.	LSI
				Relocation of ESA-required
				mitigation measure from previous
				AAFB action (ungulate fence).

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Native Wildlife	Native Wildlife	Native Wildlife	Native Wildlife	Native Wildlife
LSI	LSI	LSI	LSI	LSI
Direct impacts to 302 acres (122	Direct impacts to 335 acres (136	Direct impacts to 340 acres (138	Direct impacts to 391 acres (158	Direct impacts to 272 acres (110 ha)
ha) of potential wildlife habitat.	ha) of potential wildlife habitat.	ha) of potential wildlife habitat.	ha) of potential wildlife habitat.	of potential wildlife habitat. Wildlife
Wildlife currently present is	Wildlife currently present is	Wildlife currently present is	Wildlife currently present is	currently present is widespread on
widespread on Guam. With	widespread on Guam. With	widespread on Guam. With	widespread on Guam. With	Guam. With implementation of
implementation of BMPs,	implementation of BMPs,	implementation of BMPs,	implementation of BMPs,	BMPs, potential introduction of new
potential introduction of new or	potential introduction of new or	potential introduction of new or	potential introduction of new or	or spread of existing non-native
spread of existing non-native	spread of existing non-native	spread of existing non-native	spread of existing non-native	species on Guam during construction
species on Guam during	species on Guam during	species on Guam during	species on Guam during	activities is considered unlikely.
construction activities is	construction activities is	construction activities is	construction activities is	
considered unlikely.	considered unlikely.	considered unlikely.	considered unlikely.	
<u>Special-Status Species – Federal</u>	Special-Status Species – Federal	<u>Special-Status Species – Federal</u>	Special-Status Species – Federal	Special-Status Species – Federal ESA-
ESA-Listed and Proposed	ESA-Listed and Proposed	ESA-Listed and Proposed	ESA-Listed and Proposed	Listed and Proposed Species and
<u>Species</u>	Species	<u>Species</u>	Species	Critical Habitat
SI-M	LSI	SI-M	SI-M	SI-M
Guam rail - impacts to 283 acres	Mariana fruit bat - impacts to 43	Mariana fruit bat - impacts to	Mariana fruit bat - impacts to	Mariana fruit bat - impacts to 215
(115 ha) of rail recovery habitat.	acres (17 ha) of fruit bat recovery	223 acres (90 ha) of fruit bat	161 acres (65 ha) of fruit bat	acres (87 ha) of fruit bat recovery
	habitat; implementation of BMPs	recovery habitat.	recovery habitat.	habitat.
Potential Mitigation Measures	would avoid and minimize	Mariana crow - impacts to 230	Mariana crow - impacts to 166	Mariana crow - impacts to 215 acres
• Forest enhancement on a	impacts.	acres (93 ha) of crow recovery	acres (67 ha) of crow recovery	(87 ha) of crow recovery habitat.
minimum of 255 acres (103	Mariana crow - impacts to 43	habitat.	habitat.	Guam Micronesian kingfisher -
ha) of limestone forest.	acres (17 ha) of crow recovery	Guam Micronesian kingfisher -	Guam Micronesian kingfisher -	impacts to 215 acres (87 ha) of
Brown treesnake research	habitat; implementation of BMPs	impacts to 223 acres (90 ha) of	impacts to 161 acres (65 ha) of	kingfisher recovery habitat.
and suppression.	would avoid and minimize	kingfisher recovery habitat.	kingfisher recovery habitat.	December 1 March 1 and 1
	impacts.	December 1 March 1 Mar	December 1100	Potential Mitigation Measures
	Guam rail - impacts to 49 acres (20 ha) of rail recovery habitat;	Potential Mitigation Measures	Potential Mitigation Measures	• Forest enhancement on a
	implementation of BMPs would	• Forest enhancement on a	• Forest enhancement on a	minimum of 219 acres (89 ha) of
	avoid and minimize impacts.	minimum of 227 acres (92	minimum of 193 acres (78	limestone forest.
	Guam Micronesian kingfisher -	ha) of limestone forest.	ha) of limestone forest.	Brown treesnake research and
	impacts to 43 acres (17 ha) of	Brown treesnake research	Brown treesnake research	suppression.
	kingfisher recovery habitat;	and suppression.	and suppression.	
	implementation of BMPs would	Mariana common moorhen - loss		
	avoid and minimize impacts.	of two wetlands used by		
	Mariana swiftlet - noise levels	moorhens.		
	within the immediate vicinity of	moornens.		
	proposed construction activities	Potential Mitigation Measures		
	would be localized and	Moorhen Habitat Wetland		
	temporary; construction activities	Restoration. The DON may		
	would not impact swiftlet			
	would not impact switter	implement wetland		

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
	nesting/roosting caves approximately 2 miles (3 km) north. Serianthes tree - impacts to 18 acres (7 ha) of Serianthes recovery habitat; implementation of BMPs would avoid and minimize impacts. NI Mariana common moorhen - species is not present as there is no suitable open water habitat.	restoration in accordance with the recommendations provided in the 2014 Wetland Restoration Feasibility Study.		
Mariana fruit bat - impacts to 81 acres (33 ha) of fruit bat recovery habitat; implementation of BMPs would avoid and minimize impacts. Mariana crow - impacts to 81 acres (33 ha) of crow recovery habitat; implementation of BMPs would avoid and minimize impacts. Guam Micronesian kingfisher - impacts to 81 acres (33 ha) of kingfisher recovery habitat; implementation of BMPs would avoid and minimize impacts. Mariana eight-spot butterfly - implementation of BMPs would avoid and minimize impacts. Serianthes tree - impacts to 67 acres (27 ha) of Serianthes recovery habitat; implementation of BMPs would avoid and minimize impacts.		Guam rail - impacts to 24 acres (10 ha) of rail recovery habitat; implementation of BMPs would avoid and minimize impacts. Mariana swiftlet - noise levels within the immediate vicinity of proposed construction activities would be localized and temporary; construction activities would not impact swiftlet nesting/roosting caves approximately 1 mile (1.6 km) east. Mariana eight-spot butterfly - implementation of BMPs would avoid and minimize impacts to butterflies and host plants. Serianthes tree - impacts to 40 acres (16 ha) of Serianthes recovery habitat; implementation of BMPs would avoid and minimize impacts.	Guam rail - impacts to 50 acres (20 ha) of rail recovery habitat. Mariana swiftlet - noise levels within the immediate vicinity of proposed construction activities would be localized and temporary; construction activities would not impact swiftlet nesting/roosting caves approximately 1 mile (1.6 km) east and 2 miles (3 km) north. Mariana common moorhen - loss of one temporary wetland used by moorhens. Mariana eight-spot butterfly - implementation of BMPs would avoid and minimize impacts to butterflies and host plants. Serianthes tree - impacts to 19 acres (8 ha) of Serianthes recovery habitat; implementation of BMPs would avoid and minimize impacts.	Mariana fruit bat, Mariana crow, Guam Micronesian kingfisher critical habitat - impacts to 11 acres (5 ha) of critical habitat. The remaining area of critical habitat would remain functional to serve the intended conservation role for the bat, crow and kingfisher. Guam rail- impacts to 82 acres (33 ha) of rail recovery habitat. Mariana eight-spot butterfly - implementation of BMPs would avoid and minimize impacts. Serianthes tree- impacts to 177 acres (71 ha) of Serianthes recovery habitat; implementation of BMPs, including 100-foot (30-m) buffer around one remaining mature tree at NWF, would avoid and minimize impacts.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Special-Status Species -Guam-	Special-Status Species -Guam-	Special-Status Species -Guam-	Special-Status Species -Guam-	Special-Status Species -Guam-Listed
Listed and SOGCN	Listed and SOGCN	Listed and SOGCN	Listed and SOGCN	and SOGCN
SI-M	LSI	SI-M	SI-M	SI-M
Impacts and mitigations	Impacts to Guam-listed species	Impacts and mitigations	Impacts and mitigations	Impacts and mitigations associated
associated with Guam-listed	that are also federally listed	associated with Guam-listed	associated with Guam-listed	with Guam-listed species that are also
species that are also federally	would be the same as described	species that are also federally	species that are also federally	federally listed would be the same as
listed would be the same as	above for those species. No	listed would be the same as	listed would be the same as	described above for those species. No
described above for those	additional Guam-listed species	described above for those	described above for those	additional Guam-listed species are
species. No additional Guam-	are known to occur in the project	species.	species.	known to occur in the project area for
listed species are known to	area for this Alternative.	Impacts to other Guam-listed	Impacts to other Guam-listed	this Alternative.
occur in the project area for this		species are described below.	species are described below.	
Alternative.				
		SI-M	SI-M	
		Pacific slender-toed gecko -	Pacific slender-toed gecko -	
		impacts to 169 acres (68 ha)	impacts to 131 acres (53 ha)	
		suitable habitat.	suitable habitat.	
		5		
		Potential Mitigation Measures	Potential Mitigation Measures	
		• Forest enhancement on a	• Forest enhancement on a	
		minimum of 227 acres (92	minimum of 131 acres (53	
		ha) of limestone forest.	ha) of limestone forest.	
		Brown treesnake research	Brown treesnake research	
		and suppression.	and suppression.	
		LSI	LSI	
		Merrilliodendron megacarpum -	Merrilliodendron megacarpum -	
		implementation of BMPs would	implementation of BMPs would	
		avoid and minimize impacts.	avoid and minimize impacts.	
		avoid and minimize impacts.	avoic and minimize impacts.	
I		avoid and minimize impacts.	avoid and minimize impacts.	

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts
Vegetation LSI With implementation of BMPs, range fires and potential introduction of new or spread of existing non-native species on Guam during LFTRC operations	Vegetation LSI Same as Alternative 1.	Vegetation LSI Same as Alternative 1.	Vegetation LSI Same as Alternative 1.	Vegetation LSI Same as Alternative 1.
is considered unlikely. Terrestrial Conservation Areas NI None present	Terrestrial Conservation Areas LSI Overlay Refuge, Bolanos Conservation Area -noise levels within the conservations areas from LFTRC operations would be at or below ambient noise levels; LSI to management or conservation value of conservation areas.	Terrestrial Conservation Areas LSI Overlay Refuge - no physical disturbance of Overlay Refuge lands; temporary live-fire noise impacts to 2,993 acres (1,211 ha) of Overlay Refuge lands; implementation of BMPs would avoid and minimize impacts.	Terrestrial Conservation Areas LSI Overlay Refuge - no physical disturbance of Overlay Refuge lands; temporary live-fire noise impacts to 1,525 acres (617 ha) of Overlay Refuge lands; implementation of BMPs would avoid and minimize impacts.	Terrestrial Conservation Areas LSI Overlay Refuge - no physical disturbance of Overlay Refuge lands; temporary live-fire noise impacts to 1,691 acres (684 ha) of Overlay Refuge lands; implementation of BMPs would avoid and minimize impacts.
Native Wildlife LSI With implementation of BMPs, potential impacts to wildlife from LFTRC operations would be reduced to less than significant.	Native Wildlife LSI Same as Alternative 1.	Native Wildlife LSI Same as Alternative 1.	Native Wildlife LSI Same as Alternative 1.	Native Wildlife LSI Same as Alternative 1.
Special-Status Species - Federal ESA-Listed and Proposed Species LSI Mariana fruit bat, Mariana eight-spot butterfly - implementation of BMPs would avoid and minimize impacts.	Special-Status Species - Federal ESA-Listed and Proposed Species LSI Mariana fruit bat - no physical disturbance of recovery habitat; temporary live-fire noise impacts to 824 acres (333 ha) of fruit bat recovery habitat; implementation of BMPs would avoid and minimize impacts. Mariana swiftlet - LFTRC noise levels would not impact foraging swiftlets or swiftlet nesting/roosting caves approximately 2 miles (3 km)	Special-Status Species - Federal ESA-Listed and Proposed Species LSI Mariana fruit bat - no physical disturbance of recovery habitat; temporary live-fire noise impacts to 1,534 acres (621 ha) of fruit bat recovery habitat; implementation of BMPs would avoid and minimize impacts. Mariana swiftlet - LFTRC noise levels would not impact foraging swiftlets or swiftlet nesting/roosting caves approximately 1 mile (1.6	Special-Status Species - Federal ESA-Listed and Proposed Species LSI Mariana fruit bat - no physical disturbance of recovery habitat; temporary live-fire noise impacts to 1,506 acres (610 ha) of fruit bat recovery habitat; implementation of BMPs would avoid and minimize impacts. Mariana swiftlet - LFTRC noise levels would not impact foraging swiftlets or swiftlet nesting/ roosting caves approximately 1	Special-Status Species - Federal ESA-Listed and Proposed Species and Critical Habitat LSI Mariana fruit bat - no physical disturbance of recovery habitat; temporary live-fire noise impacts to 1,101 acres (446 ha) of fruit bat recovery habitat; implementation of BMPs would avoid and minimize impacts. Mariana eight-spot butterfly - implementation of BMPs would avoid and minimize impacts.

Legend: SI = significant impact; SI-M = significant impact-mitigable; LSI = less than significant impact; NI = no impact; NI = beneficial impact.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
	north. Mariana common moorhen - LFTRC noise levels at the closest moorhen nesting area (Fena Reservoir) would be at or below ambient noise levels.	km) north. Mariana common moorhen - LFTRC noise levels at the closest moorhen nesting area (Fena Reservoir) would be at or below ambient noise levels. Mariana eight-spot butterfly - implementation of BMPs would avoid and minimize impacts.	mile (1.6 km) north and 2 miles (3 km) east. Mariana common moorhen - LFTRC noise levels at the closest moorhen nesting area (Fena Reservoir) would be at or below ambient noise levels. Mariana eight-spot butterfly - implementation of BMPs would avoid and minimize impacts.	
NI Mariana crow, Guam rail, Guam Micronesian kingfisher - species no longer occur on Guam, therefore there would be no impacts due to operations of LFTRC.	NI Mariana crow, Guam rail, Guam Micronesian kingfisher - species no longer occur on Guam, therefore there would be no impacts due to operations of LFTRC.	NI Mariana crow, Guam rail, Guam Micronesian kingfisher - species no longer occur on Guam, therefore there would be no impacts due to operations of LFTRC.	NI Mariana crow, Guam rail, Guam Micronesian kingfisher - species no longer occur on Guam, therefore there would be no impacts due to operations of LFTRC.	NI Mariana crow, Guam rail, Guam Micronesian kingfisher - species no longer occur on Guam, therefore there would be no impacts due to operations of LFTRC. Mariana fruit bat, Mariana crow, Guam Micronesian kingfisher critical
Serianthes tree - implementation of BMPs would avoid and minimize impacts.	Serianthes tree - implementation of BMPs would avoid and minimize impacts.	Serianthes tree - implementation of BMPs would avoid and minimize impacts.	Serianthes tree - implementation of BMPs would avoid and minimize impacts.	habitat - No impacts. Mariana eight-spot butterfly- implementation of BMPs would avoid and minimize impacts. Serianthes tree - implementation of BMPs would avoid and minimize impacts.
Special-Status Species -Guam- Listed and SOGCN LSI Impacts to Guam-listed species that are also federally listed would be the same as described above for those species. No additional Guam-listed species	Special-Status Species -Guam- Listed and SOGCN LSI Impacts to Guam-listed species that are also federally listed would be the same as described above for those species. No additional Guam-listed species	Special-Status Species -Guam- Listed and SOGCN LSI Impacts to Guam-listed species that are also federally listed would be the same as described above for those species. Impacts to other Guam-listed	Special-Status Species -Guam- Listed and SOGCN LSI Impacts to Guam-listed species that are also federally listed would be the same as described above for those species. Impacts to other Guam-listed	Special-Status Species -Guam-Listed and SOGCN LSI Impacts to Guam-listed species that are also federally listed would be the same as described above for those species. No additional Guam-listed species are known to occur in the
are known to occur in the project area for this Alternative.	are known to occur in the project area for this Alternative.	LSI Pacific slender-toed gecko, Merrilliodendron megacarpum - implementation of BMPs would avoid and minimize impacts.	LSI Pacific slender-toed gecko, Merrilliodendron megacarpum - implementation of BMPs would avoid and minimize impacts.	project area for this Alternative.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Marine Biological Resources		(Allerhalive 3)	(Auternative 4)	(Auernauve 3)
Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts
Marine Flora, Invertebrates,	Marine Flora, Invertebrates, Fish,	Marine Flora, Invertebrates, Fish,	Marine Flora, Invertebrates, Fish,	Marine Flora, Invertebrates, Fish, and
Fish, and EFH	and EFH	and EFH	and EFH	EFH
LSI	NI	NI	NI	LSI
Potential indirect short-term	The project site would be located	Similar to Alternative 2, the	Similar to Alternative 2, the	The impacts would be similar to
impacts to marine flora,	entirely inland. There would be	project site would be located	project site would be located	Alternative 1.
invertebrates, fish and EFH	no-in water or coastal	entirely inland with no in-water	entirely inland with no in-water	NI
from increased recreational use	components therefore there	or coastal components.	or coastal components.	The impacts would be similar to
(damage to reefs typically	would be no direct impacts.	Stormwater runoff from the	Stormwater runoff from the	Alternative 1.
caused by anchors, reef-walkers,	Stormwater runoff from the	project area would not enter	project area would not enter	7 Hermative 1.
or scuba diving, snorkeling, and	project area would not enter	nearshore waters, therefore, there	nearshore waters; therefore, there	
fishing activities) would be	nearshore waters; therefore, there	would be no impacts to marine	would be no impacts to marine	
avoided or minimized to less	would be no impacts to marine	flora, invertebrates, fish, and EFH	flora, invertebrates, fish, and	
than significant impacts with the	flora, invertebrates, fish, and	associated with construction.	EFH associated with	
implementation of BMPs.	EFH associated with		construction.	
NI NI	construction.			
There would be no in-water				
construction or dredging;				
therefore, there would be no				
direct short-term impacts.				
Stormwater runoff from the				
project area would not enter				
nearshore waters, therefore				
there would be no short-term				
impacts to marine flora,				
invertebrates, fish, and EFH				
associated with construction				
runoff.				
Special-Status Species - Federal ESA-Listed and Proposed	Special-Status Species - Federal ESA- Listed and Proposed Species			
			Species Species	Listed and Proposed Species
Species LSI	Species NI	Species NI	Species NI	LSI
Green sea turtle, hawksbill sea	The project site would be located	Similar to Alternative 2, the	Similar to Alternative 2, the	Short-term indirect impacts would be
turtle - short-term indirect	entirely inland. There would be	project site would be located	project site would be located	similar to Alternative 1.
impacts to green sea turtle and	no in-water or coastal	entirely inland with no in-water	entirely inland with no in-water	NI
hawksbill sea turtle from	components therefore there	or coastal components.	or coastal components.	Impacts would be similar to
disturbance resulting from	would be no direct impacts.	Stormwater runoff from the	Stormwater runoff from the	Alternative 1.
increased activity in the area.	Stormwater runoff from the	project area would not enter	project area would not enter	
Potential indirect impact on	project area would not enter	nearshore waters.	nearshore waters.	
special-status species from	nearshore waters; therefore, there			

Legend: SI = significant impact; SI-M = significant impact-mitigable; LSI = less than significant impact; NI = no impact; NI = beneficial impact.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
increased recreational use as mentioned above would be avoided or minimized to less than significant impacts with the implementation of BMPs. NI There would be no in-water construction or dredging; therefore, there would be no direct impacts to green sea turtles or hawksbill sea turtles	would be no indirect impacts to Special-Status Species - Federal ESA-Listed and Proposed Species.			
associated with construction. Marine Conservation Areas NI There are no marine conservation areas at or adjacent to the proposed Route 15 LFTRC alternative. Therefore, there would be no impacts to such areas.	Marine Conservation Areas NI The project site would be located entirely inland. There would be no in water or coastal components; therefore, there would be no direct impacts. Stormwater runoff from the project area would not enter nearshore waters; therefore, there would be no indirect impacts to marine conservation areas.	Marine Conservation Areas NI Similar to Alternative 2, the project site would be located entirely inland with no in-water or coastal components. Stormwater runoff from the project area would not enter nearshore waters.	Marine Conservation Areas NI Similar to Alternative 2, the project site would be located entirely inland with no in-water or coastal components. Stormwater runoff from the project area would not enter nearshore waters.	Marine Conservation Areas LSI Construction activities for the NWF alternative are expected to result in less than significant direct and indirect short-term impacts to conservation efforts and management activities at the Guam NWR - Ritidian Unit with the implementation of BMPs.
Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts
Marine Flora and Invertebrates LSI There would be no in-water training. The small number of rounds that could ricochet outside the range and enter the marine environment would have no direct long-term impacts to marine flora and invertebrates. NI Stormwater runoff from the range area would not enter nearshore waters; therefore, there would be no long-term impacts to marine flora and invertebrates associated with range runoff.	Marine Flora and Invertebrates NI The range would be located entirely inland. There would be no-in water or coastal operations components; therefore, there would be no direct impacts. Stormwater runoff from the range area would not enter nearshore waters; therefore, there would be no indirect impacts to marine flora and invertebrates associated with operations.	Marine Flora and Invertebrates NI The range would be located entirely inland. There would be no-in water or coastal operations components; therefore, there would be no direct impacts. Similar to Alternative 2, stormwater runoff from the range area would not enter nearshore waters, thus there would be no indirect impacts to marine flora and invertebrates.	Marine Flora and Invertebrates NI The range would be located entirely inland. There would be no-in water or coastal operations components; therefore, there would be no direct impacts. Similar to Alternative 2, stormwater runoff from the range area would not enter nearshore waters, thus there would be no indirect impacts to marine flora and invertebrates.	Marine Flora and Invertebrates LSI The impacts would be similar to Alternative 1. NI The impacts would be similar to Alternative 1.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Fish and EFH LSI There would be no in-water training. The minimal number of rounds that could ricochet outside the range and enter the marine environment would have a less than significant direct, long-term impacts to fish and EFH. NI Stormwater runoff from the range area would not enter nearshore waters; therefore, there would be no long-term impacts to fish and EFH associated with range runoff.	Fish and EFH NI The range would be located entirely inland. There would be no-in water or coastal operations components therefore there would be no direct impacts. Stormwater runoff from the range area would not enter nearshore waters, therefore there would be no impacts to fish and EFH associated with operations.	Fish and EFH NI The range would be located entirely inland. There would be no-in water or coastal operations components therefore there would be no direct impacts. Similar to Alternative 2, stormwater runoff from the range area would not enter nearshore waters, thus there would be no indirect impacts to fish and EFH.	Fish and EFH NI The range would be located entirely inland. There would be no-in water or coastal operations components therefore there would be no direct impacts. Similar to Alternative 2, stormwater runoff from the range area would not enter nearshore waters, thus there would be no indirect impacts to fish and EFH.	Fish and EFH LSI The impacts would be similar to Alternative 1. NI The impacts would be similar to Alternative 1.
Special-Status Species - Federal ESA-Listed and Proposed Species LSI With use of range safety procedures, range lighting design to minimize impacts to special-status species, and implantation of BMPs, direct impacts to green sea turtles and hawksbill sea turtles would be less than significant. NI Stormwater runoff from the range area would not enter nearshore waters; therefore, there would be no long-term impacts to green sea turtles and hawksbill sea turtles from range runoff.	Special-Status Species - Federal ESA-Listed and Proposed Species NI The range would be located entirely inland. There would be no-in water or coastal operations components therefore there would be no direct impacts. Stormwater runoff from the range area would not enter nearshore waters; therefore, there would be no impacts to green sea turtles and hawksbill sea turtles associated with operations.	Special-Status Species - Federal ESA-Listed and Proposed Species NI The range would be located entirely inland. There would be no-in water or coastal operations components therefore there would be no direct impacts. Similar to Alternative 2, stormwater runoff from the range area would not enter nearshore waters, thus there would be no indirect impacts to green sea turtles and hawksbill sea turtles.	Special-Status Species - Federal ESA-Listed and Proposed Species NI The range would be located entirely inland. There would be no-in water or coastal operations components therefore there would be no direct impacts. Similar to Alternative 2, stormwater runoff from the range area would not enter nearshore waters, thus there would be no indirect impacts to green sea turtles and hawksbill sea turtles.	Special-Status Species - Federal ESA-Listed and Proposed Species LSI The impacts would be similar to Alternative 1. NI The impacts would be similar to Alternative 1.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Marine Conservation Areas	Marine Conservation Areas	Marine Conservation Areas	Marine Conservation Areas	Marine Conservation Areas
NI .	NI .	NI NI	NI NI	LSI
There are no marine	The project site would be located	Similar to Alternative 2, the	Similar to Alternative 2, the	NWF Alternative 5 operational
conservation areas at or adjacent	entirely inland. There would be	project site would be located	project site would be located	activities would result in less than
to the proposed Route 15	no in water or coastal	entirely inland with no in-water	entirely inland with no in-water	significant direct and indirect impacts
LFTRC alternative.	components therefore there	or coastal components.	or coastal components.	to conservation efforts and
Therefore, there would be no	would be no direct impacts.	Stormwater runoff from the	Stormwater runoff from the	management activities at the Guam
impacts to such areas.	Stormwater runoff from the	project area would not enter	project area would not enter	NWR - Ritidian Unit with the
	project area would not enter	nearshore waters. Therefore,	nearshore waters. Therefore,	implementation of BMPs and
	nearshore waters. Therefore,	there would be no direct or	there would be no direct or	coordination between USFWS and the
	there would be no indirect	indirect impacts.	indirect impacts.	DON for current or planned research
	impacts.			and conservation programs.
Cultural Resources				
Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts
SI-M	SI-M	SI-M	SI-M	SI-M
Potential direct adverse effects	Potential direct adverse effects to 20			
to 3 historic properties from	9 historic properties.	11 historic properties from	11 historic properties from	historic properties. Potential impacts
excavation and soil removal.	Potential impacts to culturally	excavation and soil removal.	excavation and soil removal.	to culturally important natural
Potential impacts to culturally	important natural resources from	Undetermined effects to 2	Potential impacts to culturally	resources from vegetation removal.
important natural resources	vegetation removal.	unevaluated sites and 1 potential	important natural resources from	
from vegetation removal.		TCP from excavation and soil	vegetation removal.	Potential Mitigation Measures
	Potential Mitigation Measures	removal. Potential impacts to		Proposed mitigation through 2011
Potential Mitigation Measures	Proposed mitigation through	culturally important natural	Potential Mitigation Measures	PA process, including development
Proposed mitigation through	2011 PA process, including	resources from vegetation	Proposed mitigation through	of an RMP, and coordination with
2011 PA process, including	development of an RMP and	removal.	2011 PA process, including	SHPO, concurring parties, and
development of an RMP, and	coordination with SHPO,		development of an RMP and	knowledgeable traditional
coordination with SHPO,	concurring parties, and	Potential Mitigation Measures	coordination with SHPO,	practitioners.
concurring parties, and	knowledgeable traditional	Proposed mitigation through	concurring parties, and	
knowledgeable traditional	practitioners.	2011 PA process, including	knowledgeable traditional	
practitioners.		development of an RMP, and	practitioners.	
		coordination with SHPO,		
		concurring parties, and		
		knowledgeable traditional		
		practitioners.		

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts
Potential indirect adverse effects to 1 NRHP-eligible site/potential TCP from changes in use that degrade site integrity. Potential indirect adverse effects to 1 NRHP-eligible archaeological site/potential TCP from recreational use and visual intrusion. Potential Mitigation Measures Proposed mitigation through 2011 PA with implementation of an RMP, coordination with SHPO and concurring parties, and Cultural Resources Awareness briefs.	Potential indirect adverse effects to 2 NRHP-eligible sites from changes in use that degrade site integrity. Undetermined effects to 2 unevaluated sites from changes in use that degrade site integrity. Potential indirect effects to 1 potential TCP from restricted access. Potential Mitigation Measures Proposed mitigation through 2011 PA with implementation of an RMP to include consideration for access and coordination with SHPO and concurring parties.	Potential indirect adverse effects to 25 NRHP-eligible sites and indirect effects to 2 potential TCPs from changes in use that degrade site integrity. Potential indirect effects to 5 potential TCPs from restricted access. Potential Mitigation Measures Proposed mitigation through 2011 PA with implementation of an RMP to include consideration for access and coordination with SHPO and concurring parties.	Potential indirect adverse effects to 24 historic properties from changes in use that degrade site integrity. Potential indirect effects to 4 potential TCPs from restricted access. Undetermined effects to 5 unevaluated sites and 2 potential TCPs from changes in use that degrade site integrity. Potential Mitigation Measures Proposed mitigation through 2011 PA with implementation of an RMP to include consideration for access and coordination with SHPO and concurring parties.	Potential adverse impacts to 2 NRHP-eligible archaeological sites from restricted access. SI-M Potential indirect adverse effects to 3 NRHP-eligible sites from changes in use that degrade site integrity. Potential Mitigation Measures Proposed partial mitigation through 2011 PA with implementation of an RMP to include consideration for access and coordination with SHPO and concurring parties.
Visual Resources				
Construction Impacts LSI	Construction Impacts LSI	Construction Impacts LSI	Construction Impacts LSI	Construction Impacts LSI
Visual impacts would be direct, short-term, and less than significant.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts
SI-M While the visual landscape	LSI	• •	- P P	LSI

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Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
			-	
those bordering the existing road and would produce the same type of visual experience as those from the current route. Potential Mitigation Measures To maintain the existing visual appearance, land clearing and grading should be minimized to the extent possible on lands proposed for range uses. Minimize impact by using native flora to create a natural-appearing "screen" around the cleared range areas, outside of the	(Alternative 2)	(Alternative 3) areas of removed vegetation and cut/fill features, earthen berms as well as some of the proposed structures, including some of the 72 relocated ordnance magazines. Potential Mitigation Measures Same as Alternative 1.	(Alternative 4) cut/fill features, earthen berms as well as some of the proposed structures including some of the 66 relocated ordnance magazines. Potential Mitigation Measures Same as Alternative 1.	(Alternative 5)
firebreaks/perimeter roads.				
C. I.W. A.C.				
Ground Transportation	Construction Immedia	Construction Inches	Construction Inconsets	Constant time Immosts
Construction Impacts LSI	Construction Impacts LSI	Construction Impacts LSI	Construction Impacts LSI	Construction Impacts LSI
Short-term, direct impacts from construction workers and construction-related vehicle trips resulting in congestion on on-base roadways. Implementation of appropriate work zone traffic management strategies and BMPs would minimize impacts. Potential direct and indirect impacts to ground transportation resources from construction would be minimized with implementation of appropriate work zone traffic management strategies and BMPs. Therefore, there would be less than significant short-term impacts to on-base	Similar to Alternative 1.	Similar to Alternative 1.	Similar to Alternative 1.	Similar to Alternative 1.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

		NATIONAL CONTROL OF THE PROPERTY OF THE PROPER		
Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts
Internal (range) Roadways	Internal (range) Roadways	Internal (range) Roadways	Internal (range) Roadways	Internal (range) Roadways
NI .	NI NI	NI NI	NI	NI .
No impacts to internal roadway	Similar to Alternative 1.	Similar to Alternative 1.	Similar to Alternative 1.	Similar to Alternative 1.
segments would occur, because				
all internal (range) roadway				
segments would be designed				
with the capacity required to				
accommodate the expected travel demand on the facilities.				
Marine Transportation				
Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts
NI	NI	NI	NI	NI
Construction for the project	LFTRC and associated SDZ do	Same as Alternative 2.	Same as Alternative 2.	Similar to Alternative 1, but would
takes place on shore with no in-	not extend over water used by			likely affect more marine vessels.
water or coastal components; therefore, there would be no	vessels.			
impacts to marine transportation				
during construction.				
during construction.				
Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts
LSI	NI .	NI	NI	LSI
Direct impact from full- or part-	LFTRC and associated SDZ do	Same as Alternative 2.	Same as Alternative 2.	Similar to Alternative 1.
time closure of the SDZ will	not extend over water used by			
exclude vessels from entering.	vessels.			
Through the use of live-fire				
observation, mariner				
notification, and chart updates				
to include the SDZ, impacts to				
marine transportation would be				
less than significant during				
operation.				

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

	ole 5.7-1. Summary of Impac			
Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Utilities				
Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts
LSI	LSI	LSI	LSI	LSI
Users may experience short-	Short-term, direct impacts to	Short-term, direct impacts to	Short-term, direct impacts to	Short-term, direct impacts to utilities
term construction outages with	utilities would be similar to that	utilities would be similar to that	utilities would be similar to that	would be similar to that described for
electrical power, potable water,	described for Alternative 1.	described for Alternative 1.	described for Alternative 1.	Alternative 1.
wastewater systems, and				
IT/COMM systems during				
construction. Advance notice				
and other measures would				
minimize impacts. There would				
be short-term, direct impact to the solid waste handling due to				
increases of waste during				
construction.				
Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts
LSI	LSI	LSI	LSI	LSI
Increased demand for electrical.	Short- and long-term, direct	Short- and long-term, direct	Short- and long-term, direct	Short- and long-term, direct impacts
potable water, wastewater, solid	impacts would similar to that	impacts would similar to that	impacts would similar to that	would similar to that described for
waste, and IT/COMM utility	described for Alternative 1.	described for Alternative 1.	described for Alternative 1.	Alternative 1.
would be low. Proposed				
improvements to all utilities				
have been developed to meet the				
requirements for the proposed				
action. Therefore, short- and				
long-term direct impacts would				
be less than significant.				
Socioeconomics and General				
Construction and	Construction and Operation	Construction and Operation	Construction and Operation	Construction and Operation
Operation Impacts	Impacts	Impacts	Impacts	Impacts
Sociocultural Impacts of Land	Sociocultural Impacts of Land	Sociocultural Impacts of Land	Sociocultural Impacts of Land	Sociocultural Impacts of Land
<u>Acquisition</u>	Acquisition	Acquisition	Acquisition	Acquisition
LSI	LSI	LSI	LSI	LSI
None of the lots to be	Of the 19 lots to potentially be	Of the 23 lots to potentially be	Of the 30 lots to potentially be	Alternative 5 would not require
potentially acquired are	acquired, 17 are known to be	acquired, 4 are known to be	acquired, 9 are privately owned	federal land acquisition. There would
privately owned. There would	privately owned and one lot has	privately owned and 17 lots have	and 18 have unknown	be long-term indirect sociocultural
be adverse short- and long-term,	unknown ownership, so up to 18	unknown ownership, so up to 21	ownership, so up to 27 different	impacts from restricted access due to
indirect impacts from a	different private parties could be	different private parties could be	private parties could be affected.	the potential that access restrictions
sociocultural perspective due to	affected. Should condemnation	affected. It is anticipated that, in	It is anticipated that, in all cases,	will deteriorate social networks; i.e. if
the potential for the loss of the	be necessary as a last resort,	all cases, a negotiated sale or	a negotiated sale or lease	groups of people currently (or

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Table 5.7-1. Summary of impacts and 1 occident windgation weasures for the LF TRE Atternatives				
Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
raceway park. Since groups of people currently use the raceway park for social gatherings, if these gatherings ceased then the related social networks may lose cohesiveness. Feelings of injustice may arise from deterioration of social networks.	while the landowner would be made economically whole by payment of fair market value, such an occurrence could represent an adverse long-term sociocultural impact for that individual landowner. Such instances are expected to be extremely rare or nonexistent during implementation of this alternative, and collectively would not represent a significant impact.	lease between the federal government and a willing seller would be arranged, and there would be no adverse sociocultural impact. In the unlikely event that the land was acquired through condemnation, it is possible that the individual landowner would potentially consider the forced sale or lease of property to be an adverse impact (despite being paid fair market value). Such instances are expected to be extremely rare or nonexistent during implementation of this alternative, and collectively would not represent a significant impact.	between the federal government and a willing seller would be arranged, and there would be no adverse sociocultural impact. In the unlikely event that the land was acquired through condemnation, it is possible that the individual landowner would potentially consider the forced sale or lease of property to be an adverse impact (despite being paid fair market value). Such instances are expected to be extremely rare or nonexistent during implementation of this alternative, and collectively would not represent a significant impact.	traditionally) use areas that would be restricted to hold social gatherings, then the access restrictions could impact those groups by deteriorating the social networks inherent in those groups. Also, as social networks may deteriorate due to the access restrictions, feelings of injustice may arise. While there is potential for social networks to deteriorate, it is not a certainty. Given the presence of other public recreation areas nearby, potential impacts are determined to be less than significant.
Economic Impacts of Land Acquisition LSI There would be a direct reduction in revenue to GovGuam of \$472,000 over the 2015-2018 period resulting in lost license/lease revenue from the Guam International Raceway and the coral quarry. However, because the land acquisition process would compensate for highest and best use, there would be no impact to GovGuam associated with this loss of revenue.	Economic Impacts of Land Acquisition LSI There would be a reduction of 33 acres (13 ha) of prime farmlands, leading to a potential reduction of up to \$263,500/year in property tax revenue and resulting in an adverse but less than significant impact. However, the 360 acres (146 ha) of GovGuam land subject to acquisition are not currently generating income, so a sale or lease of those lands would generate a small beneficial direct economic effect.	Economic Impacts of Land Acquisition LSI There could be a potential reduction of up to \$27,436/year in property tax revenue from acquisition of privately owned parcels. However, the 360 acres (146 ha) of GovGuam land subject to acquisition are not currently generating income, so a sale or lease of those lands would generate a small beneficial direct economic effect.	Economic Impacts of Land Acquisition LSI There could be a potential reduction of up to \$122,000/year in property tax revenue from acquisition of privately owned parcels. However, the 205 acres (83 ha) of GovGuam land subject to acquisition are not currently generating income, so a sale or lease of those lands would generate a small beneficial direct economic effect.	Economic Impacts of Land Acquisition NI Alternative 5 would not involve acquisition of non-federal land and would therefore have no economic impact relative to land acquisition.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Hazardous Materials and W	aste			
Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts
Hazardous Materials and	Hazardous Materials and	Hazardous Materials and	Hazardous Materials and	Hazardous Materials and Hazardous
Hazardous Waste Management	Hazardous Waste Management	Hazardous Waste Management	Hazardous Waste Management	Waste Management
LSI	LSI	LSI	LSI	LSI
Less than significant, direct,	Range construction activities for			
short-term increase in the use,	Alternative 2 would be similar to	Alternative 3 would be similar to	Alternative 4 would be similar to	Alternative 5 would be similar to
transport, storage and handling	those for Alternative 1.	those for Alternative 1.	those for Alternative 1.	those for Alternative 1. Construction
of hazardous materials and	Construction of Alternative 2	Construction of Alternative 3	Construction of Alternative 4	of Alternative 5 ranges would use
hazardous waste during construction. Use of BMPs and	ranges would use similar types and volumes of hazardous	ranges would use similar types and volumes of hazardous	ranges and would use similar types volumes of hazardous	similar types and volumes of hazardous materials and would
SOPs to minimize potential for	materials and would generate	materials and would generate	materials and would generate	generate similar volumes of hazardous
accidental releases and	similar volumes of hazardous	similar volumes of hazardous	similar volumes of hazardous	wastes. Use of BMPs and SOPs to
implement timely cleanup	wastes. Use of BMPs and SOPs	wastes. Use of BMPs and SOPs	wastes. Use of BMPs and SOPs	minimize potential for accidental
would reduce impacts to a less	to minimize potential for	to minimize potential for	to minimize potential for	releases and implement timely
than significant level.	accidental releases and	accidental releases and	accidental releases and	cleanup would reduce impacts to a
	implement timely cleanup would	implement timely cleanup would	implement timely cleanup would	less than significant level.
	reduce impacts to a less than	reduce impacts to a less than	reduce impacts to a less than	
	significant level.	significant level.	significant level.	
Contaminated Sites	Contaminated Sites	Contaminated Sites	Contaminated Sites	Contaminated Sites
NI .	NI NI	NI NI	NI NI	LSI
Contaminated sites were	There are no contaminated sites	Contaminated sites were	Contaminated sites were	There are two IRP and five potentially
determined to either be outside	in the proposed Alternative 2 site	determined to either be outside of	determined to either be outside	contaminated sites within the
of the proposed construction	area; therefore, there would be no	the proposed construction area	of the proposed construction area	proposed development footprint.
area and would have no direct	impacts.	and would have no direct or	and would have no direct or	Contaminated sites would be avoided
or indirect impact on site		indirect impact on site conditions,	indirect impact on site	to the maximum extent practicable. If
conditions, or have been		or have been investigated and	conditions, or have been	avoidance is not possible, active sites
investigated and determined to		determined to pose no risk to	investigated and determined to	would be appropriately remediated in
pose no risk to human health or		human health or environmental	pose no risk to human health or	accordance with CERCLA prior to
environmental receptors.		receptors.	environmental receptors.	construction activities. No Further
				Action sites would be developed in
				accordance with land use controls, if
Toxic Substances	Toxic Substances	Toxic Substances	Toxic Substances	any. Toxic Substances
Toxic Substances LSI	Toxic Substances NI	Toxic Substances LSI	LSI	LSI
Suspected LBP, ACM, and	There are no structures in the	There are existing structures on	There are existing structures on	There are existing structures on the
PCBs in existing structures on	Alternative 2 site, so no LBP,	the Alternative 3 site, so	the Alternative 4 site, so	Alternative 5 site, so potential LBP,
the Alternative 1 site would be	ACM, or PCBs would be present	suspected LBP, ACM, and PCBs	suspected LBP, ACM, and PCBs	ACM, and PCBs would be properly
properly surveyed, managed,	to be encountered during	would be properly surveyed,	would be properly surveyed,	surveyed, managed, and materials
and materials disposed of in	demolition. No such materials	managed, and materials disposed	managed, and materials disposed	disposed of in accordance with

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Table 5.7-1. Summary of impacts and rotential wingation Measures for the LFTRC Afternatives	
Route 15 NAVMAG East/West NAVMAG North/South NAVMAG L-Shaped	NWF
	ternative 5)
	and regulations. No
	nd PCBs would be used
	ction. Therefore,
	be less than significant.
	Iternative 5 site is
	SEPA Radon Zone 1, it
possible that new buildings, Zone 3, where radon intrusion NI Is possible that	
facilities, and structures could into structures would be unlikely. The Alternative 3 site is in a facilities, and st	
encounter radon intrusion. To Therefore, there would be no USEPA Radon Zone 3, where USEPA Radon Zone 3, where encounter rador	
	impact, radon resistant
resistant construction techniques with construction of Alternative would be unlikely. Therefore, would be unlikely. Therefore, construction techniques	
and mitigation systems would 2. there would be no radon toxic there would be no radon toxic mitigation systems	
	nto the building/facility
	dition, DoD would
	st facilities constructed
	n zones to verify that no
	adon gas buildup occurs
	on mitigation systems
unacceptable radon gas buildup occurs and install radon as appropriate.	
mitigation systems as	
appropriate.	
Operation Impacts Operation Impacts Operation Impacts Operation Impacts	
	terials Management
Management Management Management Management Management	
LSI LSI TI	C A1 5
	rations for Alternative 5 lar to Alternative 1;
	ong-term increase in
	ardous materials used
	to Alternative 1. The
	earance and erosion
	res and BMPs would be
	impacts to a less than
would be used to reduce impacts would be used to reduce impacts would be used to reduce impacts would be used to reduce impacts.	
to a less than significant level. to a less than significant level.	J1.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Hazardous Waste Management	Hazardous Waste Management	Hazardous Waste Management	Hazardous Waste Management	Hazardous Waste Management
LSI	LSI	LSI	LSI	LSI
A direct long-term increase in	The range operations for	The range operations for	The range operations for	The range operations for Alternative 5
hazardous waste volume of	Alternative 2 would be similar to	Alternative 3 would be similar to	Alternative 4 would be similar to	would be similar to Alternative 1;
12,880 pounds (5,542 kg) per	Alternative 1; therefore, the long-	Alternative 1; therefore, the long-	Alternative 1; therefore, the	therefore, the long-term increase in
year is anticipated. Satellite	term increase in volume of	term increase in volume of	long-term increase in volume of	volume of hazardous waste generated
hazardous waste accumulation	hazardous waste generated would	hazardous waste generated would	hazardous waste generated	would similar to Alternative 1. As
sites would be created on DoD	similar to Alternative 1. As with	similar to Alternative 1. As with	would similar to Alternative 1.	with Alternative 1, satellite hazardous
property, and managed in	Alternative 1, satellite hazardous	Alternative 1, satellite hazardous	As with Alternative 1, satellite	waste accumulation sites would be
accordance with applicable	waste accumulation sites would	waste accumulation sites would	hazardous waste accumulation	created on DoD property, and
regulations, therefore, impacts	be created on DoD property, and	be created on DoD property, and	sites would be created on DoD	managed in accordance with
would be less than significant.	managed in accordance with	managed in accordance with	property, and managed in	applicable regulations, therefore,
	applicable regulations, therefore,	applicable regulations, therefore,	accordance with applicable	impacts would be less than significant.
	impacts would be less than	impacts would be less than	regulations, therefore, impacts	
	significant.	significant.	would be less than significant.	
Contaminated Sites	Contaminated Sites	Contaminated Sites	Contaminated Sites	Contaminated Sites
NI .	NI .	NI .	NI .	LSI
Contaminated sites were	There are no contaminated sites	Contaminated sites were	Contaminated sites were	Contaminated sites (IRP and MMRP)
determined to either be outside	in the proposed Alternative 2 site	determined to either be outside of	determined to either be outside	identified under this alternative have
of the proposed construction	area; therefore, there would be no	the proposed construction area	of the proposed construction area	been investigated and determined to
area and would have no direct	impacts.	and would have no direct or	and would have no direct or	pose no risk to human health or
or indirect impact on site		indirect impact on site conditions,	indirect impact on site	environmental receptors or would be
conditions, or have been		or have been investigated and	conditions, or have been	investigated and remediated prior to
investigated and determined to		determined to pose no risk to	investigated and determined to	facility construction to ensure than no
pose no risk to human health or		human health or environmental	pose no risk to human health or	health hazards would be present
environmental receptors.		receptors.	environmental receptors.	during site operations. Therefore, the impacts to IRP/MMRP sites under this
				alternative would be less than
				significant.
Toxic Substances	Toxic Substances	Toxic Substances	Toxic Substances	Toxic Substances
LSI	NI	LSI	LSI	LSI
Suspected LBP, ACM and	No LBP, ACM and PCBs would	Suspected LBP, ACM, and PCBs	Suspected LBP, ACM, and PCBs	Suspected LBP, ACM and PCBs
PCBs would be properly	be used in new construction. No	would be properly surveyed,	would be properly surveyed,	would be properly surveyed, managed
surveyed, managed and	such materials would be present;	managed and materials disposed	managed and materials disposed	and materials disposed of in
materials disposed of in	therefore, there would be no	of in accordance with existing	of in accordance with existing	accordance with existing laws and
accordance with existing laws	impact. The site is in a USEPA	laws and regulations. No LBP,	laws and regulations. No LBP,	regulations. No LBP, ACM and PCBs
and regulations. No LBP, ACM	Radon Zone 3, where radon	ACM and PCBs would be used in	ACM and PCBs would be used	would be used in new construction.
and PCBs would be used in new	intrusion into structures would be	new construction. Therefore,	in new construction. Therefore,	Therefore, impacts would be less than
construction. Therefore, there	unlikely. Therefore, there would	impacts would be less than	impacts would be less than	significant.
would be less than significant	be no toxic substances impacts	significant.	significant.	Because the Alternative 5 site is
direct or indirect impacts to	with operation of Alternative 2.			located in a USEPA Radon Zone 1, it

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

	NAVMAC E == 4/14 == 4			
Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
human health and the		NI	NI	is possible that new buildings,
environment.		The Alternative 3 site is in a	The Alternative 4 site is in a	facilities, and structures could
Because the Alternative 1 site is		USEPA Radon Zone 3, where	USEPA Radon Zone 3, where	encounter radon intrusion. To
located in a USEPA Radon		radon intrusion into structures	radon intrusion into structures	minimize this impact, radon resistant
Zone 1, it is possible that new		would be unlikely. Therefore,	would be unlikely. Therefore,	construction techniques and
buildings, facilities, and		there would be no radon toxic	there would be no radon toxic	mitigation systems would be
structures could encounter radon		substances impacts with	substances impacts with	incorporated into the building/facility
intrusion. To minimize this		construction of Alternative 3.	construction of Alternative 3.	designs. In addition, DoD would
impact, radon resistant				periodically test facilities constructed
construction techniques and				in known radon zones to verify that no
mitigation systems would be				unacceptable radon gas buildup occurs
incorporated into the				and install radon mitigation systems
building/facility designs. In				as appropriate.
addition, DoD would				
periodically test facilities				
constructed in known radon				
zones to verify that no				
unacceptable radon gas buildup				
occurs and install radon				
mitigation systems as				
appropriate. Therefore, direct				
and indirect impacts would be				
less than significant.				
Public Health and Safety				
Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts	Construction Impacts
Operational Safety	Operational Safety	Operational Safety	Operational Safety	Operational Safety
\overline{NI}	\overline{NI}	$ \overline{NI} $	\overline{NI}	\overline{NI}
Similar to the cantonment	Similar to Alternative 1, there would			
alternatives in Chapter 4, no	would be no impacts from	would be no impacts from	would be no impacts from	be no impacts from potential
impacts to public, military	potential construction hazards.	potential construction hazards.	potential construction hazards.	construction hazards.
personnel, or worker safety are			1	
expected from potential				
construction hazards because a				
health and safety program				
would be implemented for				
construction contractors and the				
public would be excluded from				
construction areas.				

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Environmental Health Effects	Environmental Health Effects	Environmental Health Effects	Environmental Health Effects	Environmental Health Effects
LSI	LSI	LSI	LSI	LSI
Similar to the cantonment	Similar to Alternative 1, there would			
alternatives in Chapter 4, there	would be less than significant	would be less than significant	would be less than significant	be less than significant impacts
would be less than significant	impacts associated with short-	impacts associated with short-	impacts associated with short-	associated with short-term noise and
impacts associated with short-	term noise and minimal risk of	term noise and minimal risk of	term noise and minimal risk of	minimal risk of groundwater
term noise and minimal risk of	groundwater contamination	groundwater contamination	groundwater contamination	contamination during construction.
groundwater contamination	during construction.	during construction.	during construction.	
during construction of the				
LFTRC.				
<u>Hazardous Substances</u>	<u>Hazardous Substances</u>	<u>Hazardous Substances</u>	<u>Hazardous Substances</u>	<u>Hazardous Substances</u>
NI NI	NI NI	NI	NI .	NI
No impacts expected because	Same as Alternative 1.			
hazardous substance				
management and				
investigative/cleanup activities				
would be conducted in				
accordance with applicable				
regulations and established				
BMPs and SOPs.	II	II	II	Harriela dad Ondarra
Unexploded Ordnance LSI	Unexploded Ordnance LSI	Unexploded Ordnance LSI	Unexploded Ordnance LSI	Unexploded Ordnance LSI
Because UXO would be	Same as Alternative 1.			
identified and removed prior to	Same as Atternative 1.	Same as Atternative 1.	Same as reternative 1.	Same as Atternative 1.
initiating construction activities				
and construction personnel				
would be trained to avoid the				
hazards associated with				
unexploded military munitions,				
potential direct impacts from				
encounters with UXO would be				
minimized and less than				
significant.				
Traffic Incidents	Traffic Incidents	Traffic Incidents	Traffic Incidents	Traffic Incidents
LSI	LSI	LSI	LSI	LSI
Potential for a small increase in	Same as Alternative 1.			
the number of traffic accidents,				
primarily during operation				
because of the increase in				
population, but potentially also				
during construction activities.				

Legend: SI = significant impact; SI-M = significant impact-mitigable; LSI = less than significant impact; NI = no impact; NI = beneficial impact.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts	Operation Impacts
Operational Safety	Operational Safety	Operational Safety	Operational Safety	Operational Safety
LSI	LSI	LSI	LSI	LSI
Impacts from munitions	Same as Alternative 1.	Same as Alternative 1. In	Same as Alternative 1. In	Same as Alternative 1
operations/storage would have		addition, an explosive safety	addition, an explosive safety	
less than significant, long-term,		review and compliance with	review and compliance with	
direct impacts because ordnance		established safety directives	established safety directives	
and munitions would be		would help to ensure that safety	would help to ensure that safety	
managed by trained and		impacts associated with	impacts associated with	
qualified personnel in		relocating existing munitions	relocating existing munitions	
accordance with Marine Corps		magazines that are incompatible	magazines that are incompatible	
explosive safety directives.		with proposed LFTRC	with proposed LFTRC	
		development and use under this	development and use under this	
		alternative would be less than	alternative would be less than	
		significant.	significant.	
Environmental Health Effects	Environmental Health Effects	Environmental Health Effects	Environmental Health Effects	Environmental Health Effects
LSI	LSI	LSI	LSI	LSI
Based on the modeled noise	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
levels for proposed LFTRC				
activities, the overall direct or				
indirect noise impacts on public				
health and safety would be less				
than significant. Because				
measures would be taken to				
maintain a sustainable water				
supply and water well locations				
would be protected from future				
development and operational				
activities, public health and				
safety impacts from increased				
demand for potable water and				
potential water-related illnesses				
would be less than significant.				

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
	,	, ,	,	, ,
Hazardous Substances	Hazardous Substances	Hazardous Substances	Hazardous Substances	Hazardous Substances
LSI	LSI	LSI	LSI	LSI
Less than significant direct	Same as Alternative 1.			
impacts from firing range				
activities (i.e., exposure to				
airborne toxic dust) because				
range maintenance procedures				
ensure that participating				
personnel are not exposed to				
airborne contaminants above				
permissible limits and analysis				
of firing range emissions are				
below significance criteria.				
NI .				
No impacts from handling and				
use of hazardous substances				
expected because hazardous				
materials management and				
investigative/cleanup activities				
would be conducted in				
accordance with applicable				
regulations and established				
BMPs and SOPs.				
Unexploded Ordnance	Unexploded Ordnance	Unexploded Ordnance	Unexploded Ordnance	Unexploded Ordnance
LSI	\overline{NI}	\overline{NI}	NI	\overline{NI}
Less than significant direct or	Same as Alternative 1.			
indirect impacts from potential				
contact with UXO because				
unauthorized personnel would				
not be allowed on the ranges at				
any time, training areas would				
be cleared after live-fire events,				
and applicable BMPs and safety				
measures would be				
implemented.				

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Traffic Incidents	Traffic Incidents	Traffic Incidents	Traffic Incidents	Traffic Incidents
LSI	LSI	LSI	LSI	LSI
Potential increase in illegal	Same as Alternative 1 except that			
racing on local roadways and a	there would be no potential	there would be no potential	there would be no potential	there would be no potential increase in
minimal potential increase in	increase in illegal racing on local	increase in illegal racing on local	increase in illegal racing on local	illegal racing on local roadways due to
the number of traffic accidents	roadways due to removal of the	roadways due to removal of the	roadways due to removal of the	removal of the Guam International
as a result of the increase in	Guam International Raceway.	Guam International Raceway.	Guam International Raceway.	Raceway.
island population.	Guain international Raceway.	Guain international Raceway.	Guain international Raceway.	Raceway.
Corresponding impacts to public				
health and safety would be less				
than significant.				
Environmental Justice and the	no Protection of Children			
Construction and		Construction and Onesation	Construction and Onesetion	Construction and Onesetion
	Construction and Operation	Construction and Operation	Construction and Operation	Construction and Operation
Operation Impacts	Impacts	Impacts	Impacts	Impacts
Noise	Noise	Noise	Noise	<u>Noise</u>
LSI	NI	NI .	NI .	NI
Special-status populations	There would be no impact due to	Similar to Alternative 2, due to	Similar to Alternative 2, due to	Similar to Alternative 2, due to the
would not be disproportionately	construction or operational noise	the lack of populated areas and	the lack of populated areas and	lack of populated areas and sensitive
affected by construction- or	under this alternative because the	sensitive receptors in the area.	sensitive receptors in the area.	receptors in the area.
operation-related noise impacts	LFTRC activities would be in an			
from the Route 15 LFTRC	unpopulated area of Guam. The			
alternative because the entire	nearest noise receptors would be			
region has minority, low-	at least 1 mile (1.6 km) away			
income, and child populations.	from the proposed LFTRC			
All residents within the area of	location.			
noise impacts for this alternative				
would be affected in the same				
manner, resulting in less than				
significant short-term direct				
impacts.				

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
			_	
Recreation LSI The loss of the Raceway would have long-term adverse effect on recreational and sociocultural resources. However, all people of Guam would be affected by impacts to recreational resources; therefore, Alternative 1 would not result in disproportionately high and adverse effects on minority or low-income populations nor would there be disproportionate risks to the health and safety of children. Land Acquisition	Recreation LSI Similar to Alternative 1, since the impact to recreational resources would affect all people of Guam. Land Acquisition	(Alternative 3) Recreation LSI Similar to Alternative 1, since the impact to recreational resources would affect all people of Guam. Land Acquisition	(Alternative 4) Recreation LSI Similar to Alternative 1, since the impact to recreational resources would affect all people of Guam. Land Acquisition	(Alternative 5) Recreation LSI Similar to Alternative 1, since the impact to recreational resources would affect all people of Guam.
Land Acquisition LSI Low-income populations would not experience disproportionately high and adverse effects due to land acquisition because federal regulations regarding land acquisition would ensure that significant economic impacts to landowners and occupants do not occur. Land acquisition would also not result in health and safety risks that would disproportionately impact children. Therefore, Alternative 1 would not result in disproportionate land use or socioeconomic impacts to minority and low-income populations or children as a result of land acquisition, and impacts would be indirect and less than significant.	Land Acquisition LSI Similar to Alternative 1, since the proposed land acquisition would not disproportionately affect minority, low-income, and child populations.	Land Acquisition LSI Similar to Alternative 1, since the proposed land acquisition would not disproportionately affect minority, low-income, and children populations.	Land Acquisition LSI Similar to Alternative 1, since the proposed land acquisition would not disproportionately affect minority, low-income, and children populations.	Land Acquisition NI No environmental justice impacts from land acquisition, since there would be no acquisition under Alternative 5.

Table 5.7-1. Summary of Impacts and Potential Mitigation Measures for the LFTRC Alternatives

Route 15	NAVMAG East/West	NAVMAG North/South	NAVMAG L-Shaped	NWF
(Alternative 1)	(Alternative 2)	(Alternative 3)	(Alternative 4)	(Alternative 5)
Public Health and Safety	Public Health and Safety	Public Health and Safety	Public Health and Safety	Public Health and Safety
LSI	LSI	LSI	LSI	LSI
No impacts to public health and	Similar to Alternative 1, because	Similar to Alternative 1.	Similar to Alternative 1.	Similar to Alternative 1.
safety are anticipated from	regardless of where the LFTRC			
management of hazardous	is located on Guam, high			
substances, and an additional	(relative to the U.S.) percentages			
demand to public health	of minorities, low-income			
services (e.g., hospitals, and	residents, and children would be			
outpatient clinics) is not	affected, so impacts cannot be			
anticipated, resulting in less	considered disproportionate.			
than significant long-term direct				
and indirect impacts.				
Less than significant impacts to				
public safety are anticipated				
from operational safety				
concerns (i.e., explosive safety,				
electromagnetic safety, and				
construction safety). Less than				
significant indirect long-term				
impacts to public safety from				
firing range air emissions are				
anticipated. Less than				
significant impacts are				
anticipated from noise, water				
quality, and UXO. Impacts				
would not be disproportionate				
because regardless of where the				
LFTRC is located on Guam,				
high (relative to the U.S.)				
percentages of minorities, low-				
income residents, and children				
would not be affected.				

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