

Table C-1
2014 Aquatic Feature Monitoring in the Future East Garrison MRA Grenade Range

ESCA RP 2014 Annual Natural Resources Report

Date	Aquatic Feature Number	Water depth (ft.)	Approximate Surface Area of Water Present (sq. ft.)	Turbidity	pH	Percent Submergent and Emergent Vegetation	Plant Species Observed	CTS present?	CA Linderiella present?	Aquatic Invertebrates Present?	Total Rainfall During Last 7 days (in.)	Total Rainfall Since Last Monitoring Event (in.)	Total Rainfall Year to Date (in.)	Notes
1/30/2014	AF09-1A*	0	0	-	-	-	-	-	-	-	0.01	0.07	1.72	Aquatic features have not yet filled during the 2013/2014 rainy season.
	AF09-1B	0	0	-	-	-	-	-	-	-				
	AF09-2	0	0	-	-	-	-	-	-	-				
2/11/2014	AF09-1A*	0.66	350	High	-	4% emergent; 5% submergent	-	-	-	-	1.22	1.72	3.44	First monitoring event since aquatic features filled.
	AF09-1B	0	0	-	-	-	-	-	-	-				
	AF09-2	0	0	-	-	-	-	-	-	-				
2/27/2014	AF09-1A*	0.88	400	High	-	3% emergent; 3% submergent	-	-	-	-	0.68	0.8	4.24	
	AF09-1B	0	0	-	-	-	-	-	-	-				
	AF09-2	0	0	-	-	-	-	-	-	-				
3/3/2014	AF09-1A*	1.35	700	High	-	3% emergent; 3% submergent	-	-	-	-	2.64	1.96	6.2	
	AF09-1B	0.54	60	Low	-	0% emergent; 1% submergent	-	-	-	-				
	AF09-2	1.06	150	High	-	4% emergent; 30% submergent	-	-	-	-				
3/8/2014	AF09-1A*	1.05	550	Medium	-	1% emergent; 1% submergent	-	-	-	-	0.77	0.16	6.36	Pacific treefrog larvae observed.
	AF09-1B	0	0	-	-	-	-	-	-	-				
	AF09-2	0.32	25	Low	-	4% emergent; 30% submergent	-	-	-	Yes				Pacific treefrog larvae observed. Mosquito larvae present.
4/23/2014	AF09-1A*	0.9	400	High	-	3% emergent	Table 3-1 in main report	No	No	Yes	0.02	1.42	7.79	Pacific treefrog larvae observed; aquatic invertebrates are primarily back swimmers (family <i>Notonectidae</i>).
	AF09-1B	0	0	-	-	-		-	-	-				Last monitoring event before aquatic features dried up for the season.
	AF09-2	0	0	-	-	-		-	-	-				

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Aquatic Features Dry From Spring-Fall 2014														
11/3/2014	AF09-1A*	1.05	600	High	-	1% emergent; 3% submergent	-	-	-	-	2.21	3.50	2.90	First time filled during 2014/2015 rainy season
	AF09-1B	0	0	-	-	-	-	-	-	-				
	AF09-2	1.28	270	High	-	5% emergent; 30% submergent	-	-	-	-				First time filled during 2014/2015 rainy season
11/11/2014	AF09-1A*	0.88	360	Medium	-	2% emergent; 5% submergent	-	-	-	-	0.04	0.04	2.94	Pacific treefrog adult heard in and around aquatic feature
	AF09-1B	0	0	-	-	-	-	-	-	-				
	AF09-2	0.98	120	High	-	5% emergent; 30% submergent	-	-	-	-				Pacific treefrog adult heard in and around aquatic feature
12/1/2014	AF09-1A*	0.8	400	Medium	7.2	1% emergent; 3% submergent	-	-	-	-	0.15	0.85	3.79	Pacific treefrog eggs and larvae observed.
	AF09-1B	0	0	-	-	-	-	-	-	-				
	AF09-2	0.9	100	None	6.8	30% submergent; 60% emergent	-	-	-	-				Pacific treefrog adult heard and egg masses observed.

Notes:
* Restored Aquatic Feature

Aquatic Feature Monitoring Data Sheet

Observer(s):

J. Tallis +
Noel Handley

Date: 1/30/2014

Begin Time: 9:00 AM

End Time: 9:15 AM

Location: Grenade Range, Future East Garrison MRA

	Aquatic Feature Number			Comments
	AF09-1	AF09-1B	AF09-2	
Water present?	Y/N	Y/N	Y/N	
Water depth at deepest point as measured on permanent gauge (inches):	—	—	—	
If surface water not present indicate soil conditions:	saturated / moist / dry	saturated / moist / dry	saturated / moist / dry	
Water turbidity:	None - Low - Med - High	None - Low - Med - High	None - Low - Med - High	
Vegetation Observations:	—	—	—	
Fauna Observations:	—	—	—	
Other Observations:	—	—	—	

Aquatic Feature Monitoring Data Sheet

Observer(s): Joshua Tallis

Date: Feb 11, 2014

Begin Time: 1349

End Time: 1359

Location: Grenade Range, Future East Garrison MRA

	Aquatic Feature Number			Comments
	AF09-1	AF09-1B	AF09-2	
Water present?	<u>(Y)</u> N	Y <u>(N)</u>	Y <u>(N)</u>	
Water depth at deepest point as measured on permanent gauge (inches):	<u>0.66ft</u>	-	-	
If surface water not present indicate soil conditions:	saturated / moist / dry	saturated / <u>(moist)</u> / dry	saturated / <u>(moist)</u> / dry	
Water turbidity:	None - Low - Med - <u>(High)</u>	<u>(None)</u> - Low - Med - High	<u>(None)</u> - Low - Med - High	
Vegetation Observations:	-	-	-	
Fauna Observations:	-	-	-	
Other Observations:	<u>Aquatic feature filled for the first time this year.</u>			

Aquatic Feature Monitoring Data Sheet

Observer(s): Joshua Tallis

Date: 2/27/2014

Begin Time: 11:11

End Time: 11:26

Location: Grenade Range, Future East Garrison MRA

	Aquatic Feature Number			Comments
	AF09-1	AF09-1B	AF09-2	
Water present?	<u>(Y)/N</u>	<u>Y/(N)</u>	<u>Y/(N)</u>	
Water depth at deepest point as measured on permanent gauge (inches):	<u>0.88 ft</u>	<u>-</u>	<u>-</u>	
If surface water not present indicate soil conditions:	saturated / moist / dry	<u>saturated</u> / moist / dry	<u>saturated</u> / moist / dry	
Water turbidity:	None - Low - Med - <u>(High)</u>	None - Low - Med - High	None - Low - Med - High	
Vegetation Observations:	<u>-</u>	<u>-</u>	<u>-</u>	
Fauna Observations:	<u>-</u>	<u>-</u>	<u>-</u>	
Other Observations:				

Aquatic Feature Monitoring Data Sheet

Observer(s):

J. Tallis

Date:

3/3/2014

Begin Time:

12:14

End Time:

12:35

Location: Grenade Range, Future East Garrison MRA

	Aquatic Feature Number			Comments
	AF09-1	AF09-1B	AF09-2	
Water present?	(Y) N	(Y) N	(Y) N	
Water depth at deepest point as measured on permanent gauge (inches):	1.35 ft	0.54 ft	1.06 ft	
If surface water not present indicate soil conditions:	saturated / moist / dry	saturated / moist / dry	saturated / moist / dry	
Water turbidity:	None - Low - Med - <u>High</u>	None - <u>Low</u> - Med - High	None - Low - <u>Med</u> - High	
Vegetation Observations:	-	-	-	
Fauna Observations:	-	-	-	
Other Observations:				

Aquatic Feature Monitoring Data Sheet

Observer(s): J. Tallis

Date: March 8, 2014 Begin Time: 14:54
End Time: 15:08

Location: Grenade Range, Future East Garrison MRA

	Aquatic Feature Number			Comments
	AF09-1	AF09-1B	AF09-2	
Water present?	(Y) N	Y / N	(Y) N	
Water depth at deepest point as measured on permanent gauge (inches):	1.05 ft.	-	0.32 ft.	
If surface water not present indicate soil conditions:	saturated / moist / dry	saturated / <u>moist</u> / dry	saturated / moist / dry	
Water turbidity:	None - Low - <u>Med</u> - High	None - Low - Med - High	None - <u>Low</u> - Med - High	
Vegetation Observations:	-	-	-	
Fauna Observations:	Pacific tree frog larvae observed		Pacific tree frog and mosquito larvae observed.	
Other Observations:	-	-	-	

Aquatic Feature Monitoring Data Sheet

 Observer(s): *Joshua Tallis*

 Date: *4/23/2014*

 Begin Time: *09:00*

 End Time: *09:25*

Location: Grenade Range, Future East Garrison MRA

	Aquatic Feature Number			Comments
	AF09-1A	AF09-1B	AF09-2	
Water present?	Y/N	Y/N	Y/N	
Water depth at deepest point as measured on permanent gauge (inches):	<i>0.9"</i>	<i>-</i>	<i>-</i>	<i>Last time water ponded during current wet season.</i>
If surface water not present indicate soil conditions:	saturated / moist / dry	saturated / <u>moist</u> / dry	saturated / <u>moist</u> / dry	
Water turbidity:	None - Low - Med - <u>High</u>	None - Low - Med - High	None - Low - Med - High	
Vegetation Observations:	<i>-</i>	<i>-</i>	<i>-</i>	
Fauna Observations:	<i>-Tree frog larvae present</i>	<i>-</i>	<i>-</i>	
Other Observations:	<i>-Back swimmers present (Notonectidae)</i>	<i>-</i>	<i>-</i>	

Aquatic Feature Monitoring Data Sheet

Observer(s): J. Tallis

Date: 3 Nov 2014

Begin Time: 13:30 - 14:00

End Time:

Location: Grenade Range, Future East Garrison MRA

	Aquatic Feature Number			Comments
	AF09-1A	AF09-1B	AF09-2	
Water present?	(Y) N	Y (N)	(Y) N	
Water depth at deepest point as measured on permanent gauge (inches):	1.05"	Ø	1.275"	
If surface water not present indicate soil conditions:	saturated / moist / dry	saturated / moist / dry	saturated / moist / dry	
Water turbidity:	None - Low - Med - (High)	None - Low - Med - High	None - Low - Med - (High)	
Vegetation Observations:	Most species have not respond to the rain that fell two days ago			
Fauna Observations:	A few insects on the water	None	A few insects on the water	
Other Observations:	-	-	New water ponding at east end of aquatic feature AF09-2	

Aquatic Feature Monitoring Data Sheet

Observer(s): J.T. Tallis

Date: 11/11/2014

Begin Time: 10:04

End Time: 10:14

Location: Grenade Range, Future East Garrison MRA

	Aquatic Feature Number			Comments
	AF09-1A	AF09-1B	AF09-2	
Water present?	(Y) N	Y (N)	(Y) N	
Water depth at deepest point as measured on permanent gauge (inches):	0.85 ft	-	0.98 ft	
If surface water not present indicate soil conditions:	saturated / moist / dry	saturated / <u>moist</u> / dry	saturated / moist / dry	
Water turbidity:	None - Low - <u>Med</u> - High	None - Low - Med - High	None - Low - Med - <u>High</u>	
Vegetation Observations:	-	-	-	Oc mispon glaber are submerged in AF09-1A
Fauna Observations:	Pacific chorus frog heard in and around AF09-1A + AF09-2. Pacific chorus frog larvae in AF09-1A			
Other Observations:	-	-	-	

Aquatic Feature Monitoring Data Sheet

 Observer(s): Joshua Tallis

 Date: 12/1/2014

 Begin Time: 0850

 End Time: 0905

Location: Grenade Range, Future East Garrison MRA

	Aquatic Feature Number			Comments
	AF09-1A	AF09-1B	AF09-2	
Water present?	(Y) N	Y (N)	(Y) N	
Water depth at deepest point as measured on permanent gauge (inches):	0.8"		0.9"	
If surface water not present indicate soil conditions:	saturated / moist / dry	saturated / <u>moist</u> / dry	saturated / moist / dry	
Water turbidity:	None - Low - <u>Med</u> - High	None - Low - Med - High	<u>None</u> - Low - Med - High	AF09-2 is transparent but a red brown color as with tannins. such
Vegetation Observations:	Submerg = 3% emerg = 1%		Submerged 60% Emergent: 30%	
Fauna Observations:	Pacific tree frog egg masses and larvae	-	Pacific tree frog egg masses observed and adults heard near edge of aquatic feature	
Surface water area: Other Observations:	400ft ²		100ft ²	
pH	7.2	-	6.8	

Appendix C - Aquatic Feature Monitoring Photo-documentation
Future East Garrison MRA – Grenade Range



Photograph 1

Restored aquatic feature AF09-1A before seasonal filling.

30 January, 2014



Photograph 2

Aquatic feature AF09-2 before seasonal filling.

30 January, 2014

FORA ESCA Remediation Program

Appendix C - Aquatic Feature Monitoring Photo-documentation
Future East Garrison MRA – Grenade Range



Photograph 3

Restored aquatic feature AF09-1A with first ponded water of the rainy season. Photo looking west.

11 February 2014



Photograph 4

Restored aquatic feature AF09-1A completely full. Photo looking east.

3 March 2014

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Appendix C - Aquatic Feature Monitoring Photo-documentation
Future East Garrison MRA – Grenade Range



Photograph 5

Aquatic feature
AF09-1B partially
full.

3 March 2014



Photograph 6

Aquatic feature
AF09-2.

8 March 2014

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Appendix C - Aquatic Feature Monitoring Photo-documentation
Future East Garrison MRA – Grenade Range



Photograph 7

Aquatic feature
AF09-2 with Pacific
treefrog (*Hyla
regilla*) larvae.

8 March 2014



Photograph 8

Early 2014/2015
rainy season
standing water and
greening in restored
aquatic feature
AF09-1A.

11 November 2014

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