

Table E-1
2014 Erosion Monitoring and Maintenance

ESCA RP 2014 Annual Natural Resource Report - Appendix E

Date	MRA	Location	Type	Findings	Actions
1/30/2014	FEG	Grenade Range	Post-Rain Event	-Wattles, erosion blanket, and sand bags functioning properly. -Minor ponding observed above water bar.	-None needed.
2/11/2014	FEG	Grenade Range	Post-Rain Event	-Wattles, erosion blanket, and sand bags functioning properly.	-None needed.
2/11/2014	SEA	Blue Line Road	Post-Rain Event	-Rolling dips near Watkins Gate Road functioning well. -Rilling observed at north end of Blue Line Road.	-Continue to monitor rilling at north end of Blue Line Road.
2/11/2014	IAR	R44/R47/ Development Parcel	Post-Rain Event	-Wattles, silt fence, and sand bags functioning properly. -Erosion blanket on escarpment is torn in places.	-Continue to monitor erosion blanket on escarpment for possible erosion.
2/17/2014	IAR	R47: Escarpment and south road	Routine	-No erosion observed along road south of R47. -Erosion blanket is in need of repair to function properly.	-None.
2/24/2014	IAR	R47/ Development Parcel	Repair	-Rilling occurring in south development parcel. -Rilling occurring in R47 near west gate.	-Sand bags filled and installed in south development parcel to control rilling and prevent gully formation and soil transport. -Sand bags installed in R47 as water bar. -Control of rilling in south development parcel and near R47 west gate completed on 2/24/2014.
2/27/2014	FEG	Grenade Range	Post-Rain Event	-Wattles need soil removed upslope in places. -Sand bags functioning properly. -Erosion blanket should be installed where rilling and gullying occurring.	-BMPs repaired on March 3-6, 2014.
2/27/2014	IAR	R47/ Development Parcel	Post-Rain Event	-Wattles functioning adequately but some should be replaced. New wattles needed on north side. -Erosion blanket torn in places. -Existing sand bags functioning well. More sand bags needed along north side of R47 and development parcel.	-None.
2/27/2014	SEA	Blue Line Road	Post-Rain Event	-Rolling dips near Watkins Gate Road are starting to get overtopped and should be larger.	-Communicated findings to Army.
3/3/2014	FEG	Grenade Range	Post-Rain Event	-Some wattles need sand removed on upslope side. -Blanket needs to be installed where gully developing. -Existing sand bags functioning well. More sand bags needed on east side of aquatic feature AF-09-1A.	-BMPs repaired on March 3-6, 2014.
3/6/2014	FEG	Grenade Range	Post-Rain Event	-Some wattles need sand removed on upslope side. -Erosion blanket needs to be installed where gully developing. -Existing sand bags functioning well. More sand bags needed on east side of aquatic feature AF-09-1A.	-Sand removed upslope of wattles. -Sand bags installed everywhere needed to slow water or reinforce water bars. -Sand removed from above sand bag chevrons. -Sand bag berms erected on east side of aquatic feature AF09-1A. -FEG erosion repairs made March 3-6, 2014.
8/25/2014	IAR	Development Parcel	Pre-Winter	-Most water bars functioning properly but some need repair due to cutting through and along water bars. -Sand bags needed where rilling and gullying occurring.	BMPs repaired. Completed on October 6, 2014.
8/25/2014	IAR	R47	Pre-Winter	-Wattles along north fence need repair. Additional wattles needed. -Erosion blanket on escarpment torn in places. -Silt fence functioning but one hold present. -Sand bags functioning well.	BMPs repaired. Completed on October 6, 2014.
8/26/2014	FEG	Grenade Range	Pre-Winter	-Wattles need repair. -Erosion blanket in one location needs repair. -Sand bags need repair. Additional bags needed.	BMPs repaired. Completed on October 6, 2014.
9/8/2014	FEG	Grenade Range	Pre-Winter	-Wattles around aquatic features can be removed where not needed. Wattles on north slope need replacement at places. An additional row can be added. -Blanket undercut with rills at places. Can be addressed upslope or with additional blanket installed in rill. -Plastic sand bags should all be removed. -Water bars need reinforcement with sand bags at low points. -Two additional water bars needed on upper terrace.	BMPs repaired. Completed on October 6, 2014.

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Date	MRA	Location	Type	Findings	Actions
9/9/2014	IAR	Development Parcel	Pre-Winter	-Water bars are breached in multiple locations. Secondary road has large gullies.	BMPs repaired. Completed on October 6, 2014.
9/17/2014	IAR	Development Parcel	Pre-Winter	-Wattles not functioning properly and need more sand bags to weight them down. -Sand bags need to be installed in gullies and water bar breaches. -Plastic and wattles needed for sand stockpile at Weston trailer.	BMPs repaired. Completed on October 6, 2014.
9/17/2014	IAR	R44 North and South	Pre-Winter	No erosion observed.	BMPs repaired. Completed on October 6, 2014.
10/6/2014	FEG	Grenade Range	Pre-Winter	-Wattles needed to slow surface flow. -Small section of erosion blanket on steep slope needs repair. -Sand bags needed where rills/gullies formed. -Plastic sand bags should be replaced with burlap that will biodegrade in place.	-New wattles installed throughout grenade range. -Repaired erosion blankets where undercutting occurred. -New sand bags installed throughout grenade range where needed. Plastic sand bags replaced with burlap. -Repairs completed on October 6, 2014.
10/6/2014	IAR	R47	Pre-Winter	-Wattles needed along north fence. -Silt fence has a hole.	-New wattles installed along north side of R47 where needed. -Additional silt fence installed inboard of existing silt fence. -Repairs completed on October 6, 2014.
10/6/2014	IAR	Development Parcel	Pre-Winter	-Wattles needed to slow sheet flow. -Sand bags needed along berms and in gullies. -Vehicle traffic should be focused along single route to reduce aeolian erosion.	-Wattles installed to slow water flow and prevent rilling. -New sand bags installed throughout development parcel where needed to control erosion. -Vehicle driving routes marked out to avoid excessive loosening of hard packed sand. -Repairs completed on October 6, 2014.
11/3/2014	SEA	Blue Line Road	Post-Rain Event	-No major concerns. -Minor rilling on north end of Blue Line Road.	-None needed .
11/3/2014	IAR	R47	Post-Rain Event	-No major concerns. -Small gully identified on east end of escarpment.	-None needed.
11/3/2014	IAR	Development Parcel	Post-Rain Event	-Water has run around many sand bag dams on water bars and gullies. Need repair -Significant sand movement in center of parcel	-Repairs made on 11/12/2014.
11/3/2014	FEG	Grenade Range	Post-Rain Event	-Water running under some new wattles. -Water bars need to be cleaned out. -Sand bag chevrons need cleaning -New piece of erosion blanket on east facing slope needs to be staked more thoroughly.	-Repairs made on 11/10/2014.
11/10/2014	FEG	Grenade Range	Post-Rain Event	-No concerns	-Additional stakes added to wattles. -Water bars cleaned out and berms built up. -Approx 25 sand bags filled and placed. -BMP repairs completed on November 12, 2014.
11/12/2014	IAR	Development Parcel	Post-Rain Event	-No concerns	-Repairs made to all water bars, wattles, and chevrons on 10-12 November 2014.
11/12/2014	FEG	Grenade Range	Pre-Winter	-No concerns	-Hydroseeding done on two acres using locally collected native seed and local grass seed genotype. -Hydroseeding completed on November 12, 2014.

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Date	MRA	Location	Type	Findings	Actions
11/12/2014	IAR	R47-Escarpment/ Development Parcel	Pre-Winter	-No concerns	-Hydroseeding of 0.5 acre escarpment using locally collected native seed and local grass seed genotype. -Hydromulching of 2.5 acres in south end of development parcel. -Hydroseeding completed on November 12, 2014.
12/1/2014	IAR	Development Parcel	Post-Rain Event	-No concerns	-None needed.
12/1/2014	FEG	Grenade Range	Post-Rain Event	-No concerns	-None needed.
12/3/2014	FEG	Grenade Range	Post-Rain Event	-Significant seedling growth from hydroseed! -A sand bag had been driven over as you enter grenade range	-Crushed sand bag was repaired.
12/3/2014	IAR	Development Parcel	Post-Rain Event	-No concerns	-None needed.
12/3/2014	IAR	R47	Post-Rain Event	-Significant seedling growth from hydroseed!	-Minor shoveling along silt fence to keep it buried.
12/3/2014	SEA	Blue Line Road	Post-Rain Event	-Minor rilling and beginning of gullies along north end of SEA MRA blue line road.	-None needed.

ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis

MRA: FEG

Monitoring Date: 1/30/2014

Type of Monitoring: Pre-rain event ☒ Post rain-event ☐ Routine - Other

1. Existing Erosion/Sediment Control Measures Present? ☒ Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>Y</u>	<u>N</u>	
Blanket	<u>Y</u>	<u>N</u>	
Silt Fence	<u>N/A</u>		
Sand Bags	<u>Y</u>	<u>N</u>	

2. Are there signs of water erosion? Y ☒ N - N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y ☒ N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? ☒ Y ☐ N Size and depth:

some ponding above water bar w/ sand bags

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

N/A

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: Joshua Tallis

MRA: FEG Grenade Range

Monitoring Date: 2/11/2014

Type of Monitoring: Pre-rain event ~~Post rain-event~~ Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>Yes</u>	<u>No</u>	<u>See photos</u>
Blanket	<u>Yes</u>	<u>No</u>	<u> </u>
Silt Fence	<u>Yes</u>	<u>No</u>	<u> </u>
Sand Bags	<u>Yes</u>	<u>No</u>	<u>↓</u>

2. Are there signs of water erosion? Y N N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y N N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

N/A

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: Joshua Tallis

MRA: SEA

Monitoring Date: 2/11/2014

Type of Monitoring: Pre-rain event ☒ Post rain-event ☐ Routine - Other ☐

1. Existing Erosion/Sediment Control Measures Present? ☒ Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles			
Blanket			
Silt Fence			
Sand Bags			
Water Bar	Yes.	No	Large water bags/road dips are working well. They were constructed by the Army near Watkins Gate west

2. Are there signs of water erosion? ☒ Y - ☐ N - N/A

(Rilling - gullying) ☒ Loss of fines from surface ☒ Sand/silt deposit in fans/basins

Comments: At north end of SEA MKT along the blue line rd. Deepest rill is 6" deep. See photos

3. Are there signs of wind erosion? ☒ Y - ☐ N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? ☒ Y ☐ N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe: N/A

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: JOSHUA TALLIS

MRA: IAR R44, R47, Devel. parcel

Monitoring Date: 2/11/2014

Type of Monitoring: Pre-rain event - Post rain-event Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>Yes</u>	<u>No</u>	<u>Some are full of holes from birds or other animals but appear to still function.</u>
Blanket	<u>No</u>	<u>Yes</u>	<u>Blanket is decomposing and tearing. Large holes exist</u>
Silt Fence	<u>Yes</u>	<u>No</u>	
Sand Bags	<u>Yes</u>	<u>No</u>	

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullying - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: Rilling in development parcel near pump house.
Rilling on road entering range 47 from south near pedestrian gate in deer fence

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

N/A

6. Do you have other erosion concerns?

Slight sand deposition along Range 44 north transects.
Rilling not visible.

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis

MRA: IAR - Rd S. of R47
- R47 Scrapment

Monitoring Date: 2/17/2014

Type of Monitoring: Pre-rain event - Post rain-event (Routine) Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	-		
Blanket	N	Y	Blanket torn in a few places; esp. at top.
Silt Fence	-		
Sand Bags	-		

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y / N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted (not present?) (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis

MRA: IAR R47/Devel Parcel

Monitoring Date: 2/24/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present (Y or N. If N skip to 2.)

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>N/A</u>		
Blanket			
Silt Fence			
Sand Bags	<u>Sand bags needed</u>	<u>Y</u>	<u>Sand bags filled.</u>
Berms	<u>N/A</u>	<u>Y</u>	<u>Sand bags were filled in the compacted perimeter of R47</u>

2. Are there signs of water erosion? Y - N (N/A)

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y - N (N/A)

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y/N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

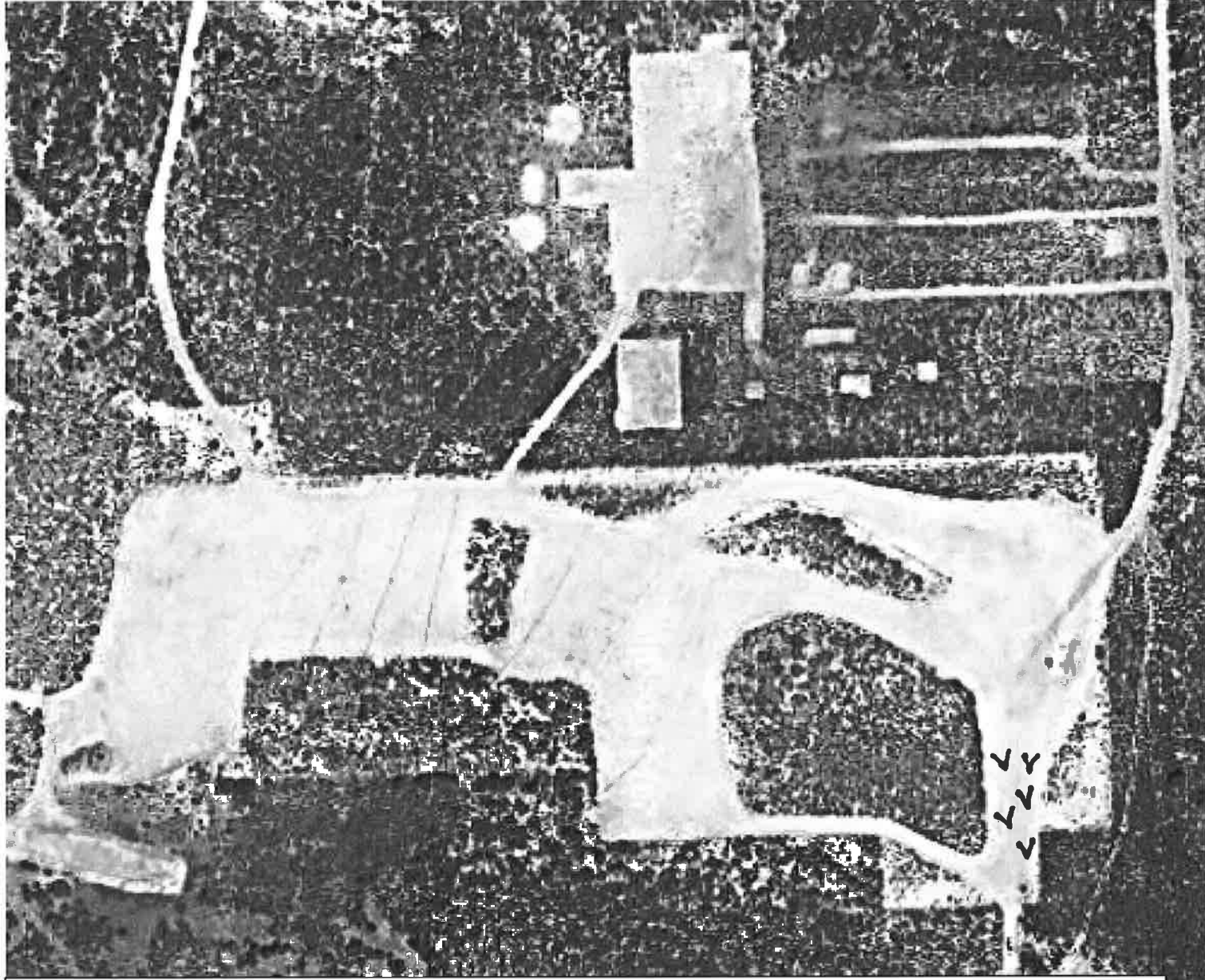
Sand bags were filled and placed in the
south IAR development parcel to control
erosion in rills turning to gullies.

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

IAR-Devel. Parcel/NR44 Erosion Monitoring

Date: 2/24/2014

< = Sand bag chevron installed to slow water flow and increase sediment deposition.



ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis + N. Handlery
Monitoring Date: 2/27/2014

MRA: FEG - Grenade Range

Type of Monitoring: Pre-rain event ☒ Post rain-event ☐ Routine - Other

1. Existing Erosion/Sediment Control Measures Present? ☒ Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>Y</u>	<u>Y</u>	<u>Remove soil behind wattles where its building up.</u>
Blanket	<u>—</u>		
Silt Fence	<u>—</u>		
Sand Bags	<u>Y</u>	<u>N</u>	

2. Are there signs of water erosion? ☒ Y - N - N/A

☒ Rilling ☒ gullying - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: install blanket @ N end end of water bar seen on photo 5.

3. Are there signs of wind erosion? Y ☒ N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? ☒ Y / N Size and depth: 2"

Ponding behind water bar w/ white sand bags.

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, ☒ not present? (Circle applicable)

Describe: N/A

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis + N. Handley
 Monitoring Date: 2/27/2014

MRA: IAR R47+ Devel. Parcel

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>Generally in good shape</u>	<u>Y</u>	<u>Some wattles should be fixed. Mostly new wattles need to be installed.</u>
Blanket	<u>On escarpment needs repair</u>	<u>Y</u>	<u>blanket torn in many places, especially at top</u>
Silt Fence		<u>N</u>	
Sand Bags	<u>Need more</u>	<u>Y</u>	<u>Need to fill and place new sand bags on rivulets in R47+ devel. parcel</u>

2. Are there signs of water erosion? Y - N - N/A

(Rilling) - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: R47 - many places w/ rilling, loss of fines and deposition @ bottom of site.
Devel. Parcel - Gullys starting.

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y / N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

N/A

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: J Tallis + N Handley

MRA: SEA - Blue Line Rd.

Monitoring Date: 2/27/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>N/A</u>		
Blanket			
Silt Fence			
Sand Bags			
Rolling Dips	<u>yes but some overtopping</u>	<u>Y</u>	<u>Dip and berm need to be bigger where Army did repairs near Watkins Gate West</u>

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullying - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: Rilling starting in a few spots along Blue Line Rd.,
especially at north end.

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding?

Y / N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

N/A

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: JTallis

MRA: FEG - Grenade Range

Monitoring Date: 3-3-2014

Type of Monitoring: Pre-rain event ☒ Post rain-event ☐ Routine - Other

1. Existing Erosion/Sediment Control Measures Present ☒ Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	N	Y	most wattles functioning well some need sediment shoveled out. one wattle needs to be extended.
Blanket	N	Y	Minor erosion around edges of blanket. See photos
Silt Fence			
Sand Bags	Y	Y	Need sand bags placed @ E end of AF-09-1A to prevent water from cutting channel on low end.

2. Are there signs of water erosion? ☒ Y - ☐ N - N/A

Rilling - gullying - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: See photos and map

3. Are there signs of wind erosion? ☒ Y - ☐ N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? ☒ Y ☐ N Size and depth:

Above wattles and along water bars. See photos

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:
N/A

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis

MRA: FE G - Grenade Range

Monitoring Date: 3/6/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>Y</u>	<u>N</u>	
Blanket	<u>Y</u>	<u>N</u>	
Silt Fence	<u>—</u>	<u>—</u>	
Sand Bags	<u>Y</u>	<u>N</u>	

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y / N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis

MRA: IAR - Development Parcel

Monitoring Date: 8/25/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other Pre-Winter

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	—		
Blanket	—		
Silt Fence	—		
Sand Bags	—		
water Bar	N	Y	see photos + map

2. Are there signs of water erosion? Y - N - N/A

Rilling gullying Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y / N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis

MRA: 1A12-R47

Monitoring Date: 8/25/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other Pre-winter

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>N</u>	<u>Y</u>	<u>Replace and add additional along N fence</u>
Blanket	<u>N</u>	<u>Y</u>	<u>See photos and map.</u>
Silt Fence	<u>Y</u>	<u>N</u>	<u>One minor hole present</u>
Sand Bags	<u>Y</u>	<u>N</u>	

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: N side of R47 along fence

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y / N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe: N/A

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: JTallis

MRA: FEG - Grenade Range

Monitoring Date: 8/26/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine ☒ Other ☐ Pre - winter

1. Existing Erosion/Sediment Control Measures Present ☒ Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	N	Y	
Blanket	N	Y	see photo. Needs repair
Silt Fence	N/A		
Sand Bags	N	Y	

2. Are there signs of water erosion? ☒ Y ☒ N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? ☒ Y ☒ N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? ☒ Y ☒ N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe: N/A

6. Do you have other erosion concerns?

N

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: Doug FISCHER

MRA: FEG

Monitoring Date: 9/8/14

Type of Monitoring: Pre-rain event - Post rain-event - Routine Other pre-winter

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	around aquatic features - no longer needed - removed as necessary - most left to decompose in situ		
Blanket	undercut with rills in places on steep east slope. can be addressed uphill or by slitting and replacing additional blanket and/or hydromulch		
Silt Fence	on steep east slope - upper row needs replacement. additional row to be added above current upper row - all placed - to be staked next week		
Wattles			
Sand Bags	plastic bags all need to be removed and disposed of. Soil will be used to reinforce sand bag berms around aquatic features		
water bars	4 water bars need reinforcement with sand bags at low points. 2 additional water bars needed on upper terrace and road		

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullying - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: mostly well-controlled

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments: minor aeolian deposition around some obstructions

4. Are there areas of ponding? Y N Size and depth: not outside aquatic features

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns? -

steep east slope needs additional hydromulch

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: Doug Fischer

MRA: IAR DEVELOPMENT PARCEL

Monitoring Date: 9/9/14

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other Pre-Winter

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>—</u>		
Blanket	<u>—</u>		
Silt Fence	<u>—</u>		
Sand Bags	<u>—</u>		
water bars	multiple breaches in upper one & smaller breaches at termini of each lower one SE corner road has large gullies		

2. Are there signs of water erosion? Y - N - N/A

Rilling gullying - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: see above

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y / N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe: N/A

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: JTallis

MRA: IAR Development Parcel

Monitoring Date: 9/17/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other Pre-Winter

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	N	Y	Need more sand bags to weight down wattles - see map
Blanket	N/A		
Silt Fence	N/A		
Sand Bags	N	Y	Need to add bags of sand as per map.

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments: Hydromulch from 2013 is gone in most areas, especially near connex and pump house.

4. Are there areas of ponding? N/A Y / N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted not present? (Circle applicable)

Describe: Need to add plastic over sand pile @ western trailer. Need sand bags on wattle.

6. Do you have other erosion concerns?

Alvaro is going to fix.

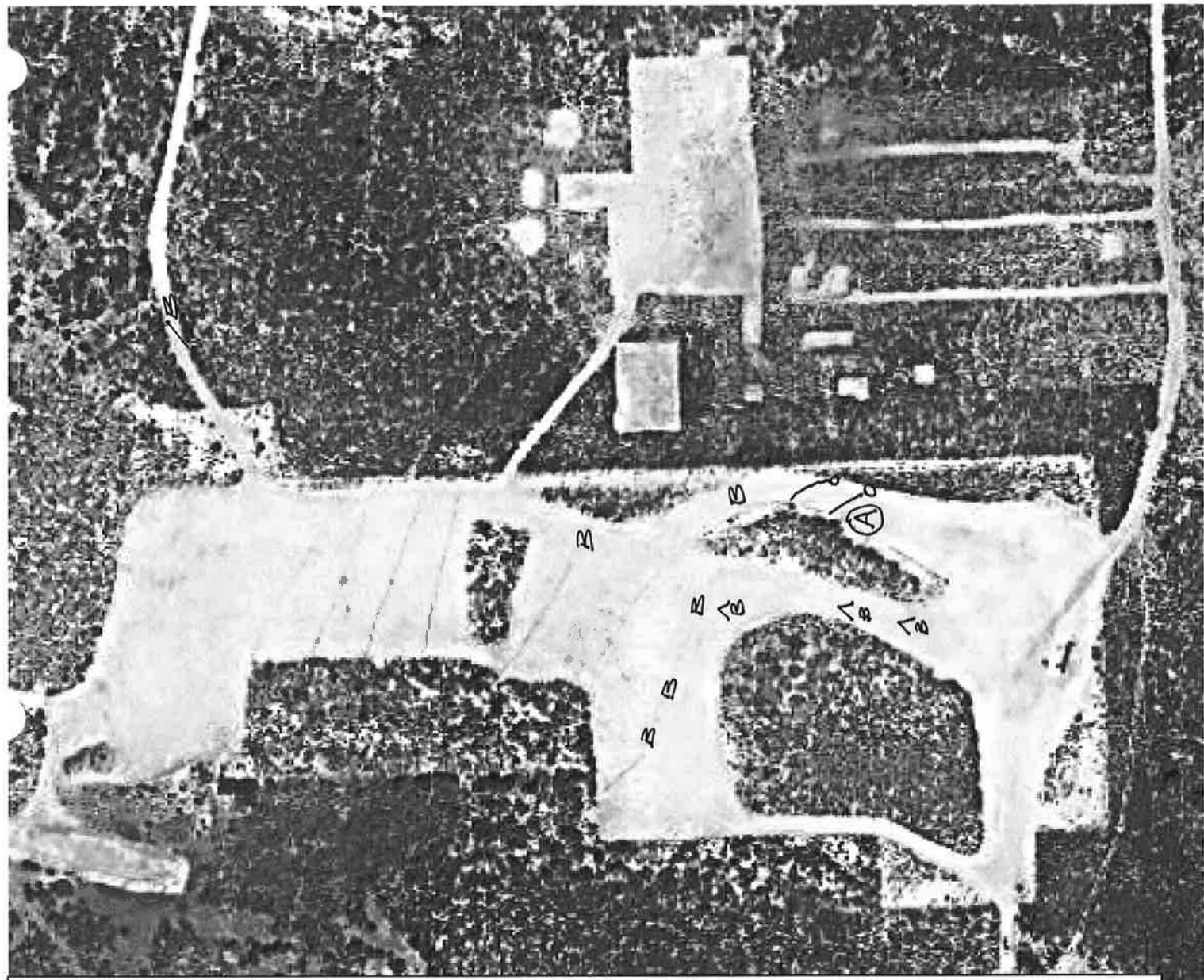
Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

IAR-Devel, Parcel/NR44 Erosion Monitoring

Date: 9/17/2014

① Wattles need to be weighted down with additional sand bags

② Additional sand bags needed



ESCA RP Erosion Monitoring Form

Conducted By: J Tallis

MRA: IAR - R44 South + North

Monitoring Date: 9/17/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other Pre-Winter

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles			
Blanket			
Silt Fence			
Sand Bags			

2. Are there signs of water erosion? Y - ☒ N - N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y - ☒ N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y ☒ N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, ☒ not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No.

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: JTallis

MRA: - FEG - Grenade Range

Monitoring Date: 10/6/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine - ~~Other~~ Pre - Winter

1. Existing Erosion/Sediment Control Measures Present? ☒ Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	New wattles installed as per map. Existing wattles functioning well.	Removed old wattles.	
Blanket	Repaired blanket where undercutting occurring by stubbing rolled blanket in gully. Soil too hard for adequate staking. Add stakes when soil moist.		
Silt Fence	None		
Sand Bags	New bags installed as per map. Plastic bags replaced w/ burlap.		

2. Are there signs of water erosion? Y ☒ N N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y ☒ N N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y ☒ N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

N/A

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

FEG Grenade Range Erosion Monitoring

Date: 10/6/2014

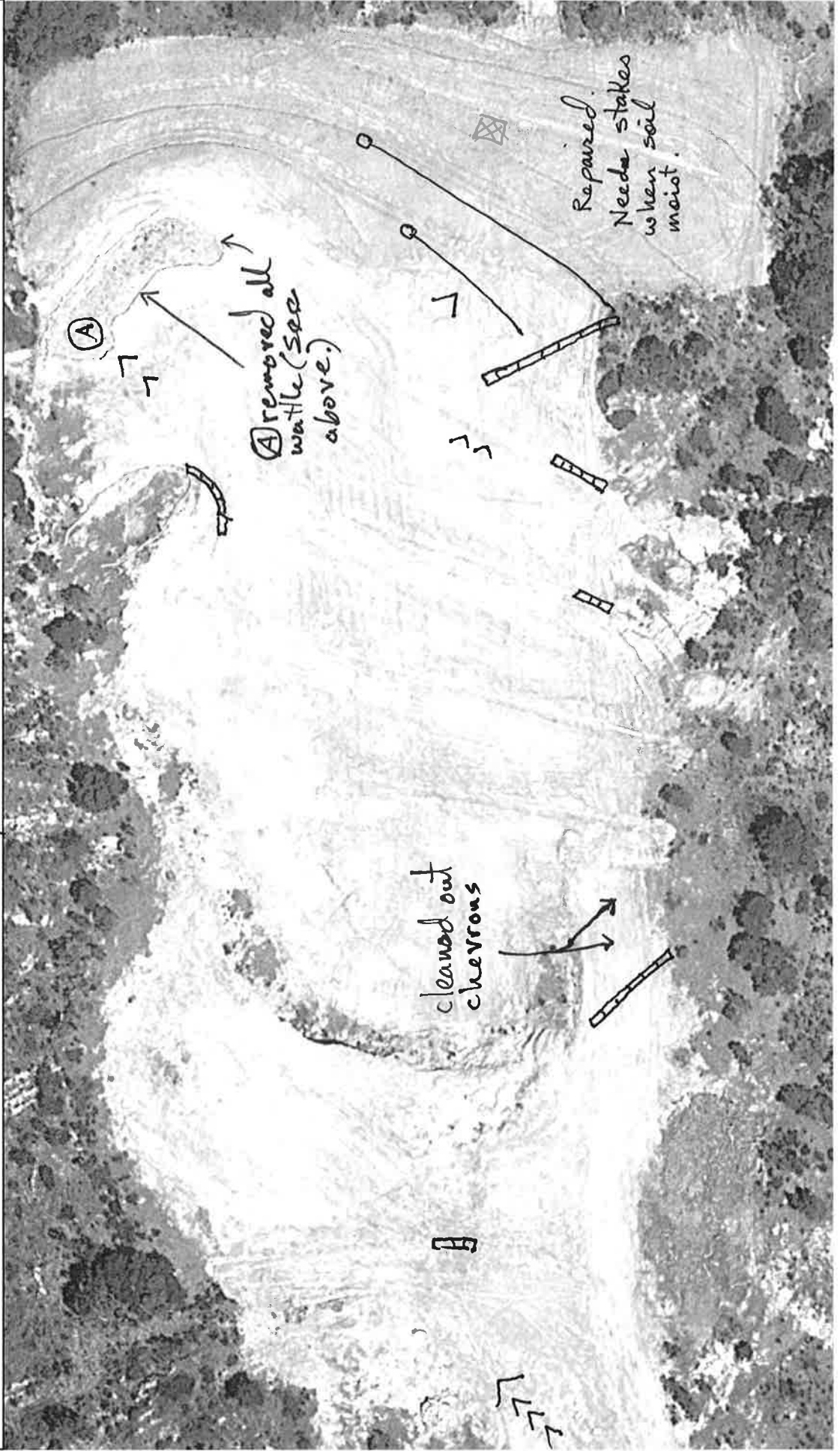
① AFO9-1A: Wattle removed, silt behind wattle removed, plastic sand bags removed

□ = sand bags installed or fixed

V = sand bag chevron installed or fixed

— = straw wattle installed or replaced

⊠ = erosion blanket installed or replaced



ESCA RP Erosion Monitoring Form

Conducted By: JTallis

MRA: IAR - R47

Monitoring Date: 10/6/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine ☒ Other Pre-winter repairs

1. Existing Erosion/Sediment Control Measures Present? ☒ Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	New wattles installed along N side of R47 as per map.		
Blanket			
Silt Fence	Additional (2nd) silt fence installed upslope of existing fence on N side of R47 as per map. New silt fence installed on east side of site as per map.		
Sand Bags			

2. Are there signs of water erosion? ☒ Y - N - N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: Addressed w/ wattles and silt fence as per map.

3. Are there signs of wind erosion? Y ☒ N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y ☒ N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

N/A

6. Do you have other erosion concerns?

No

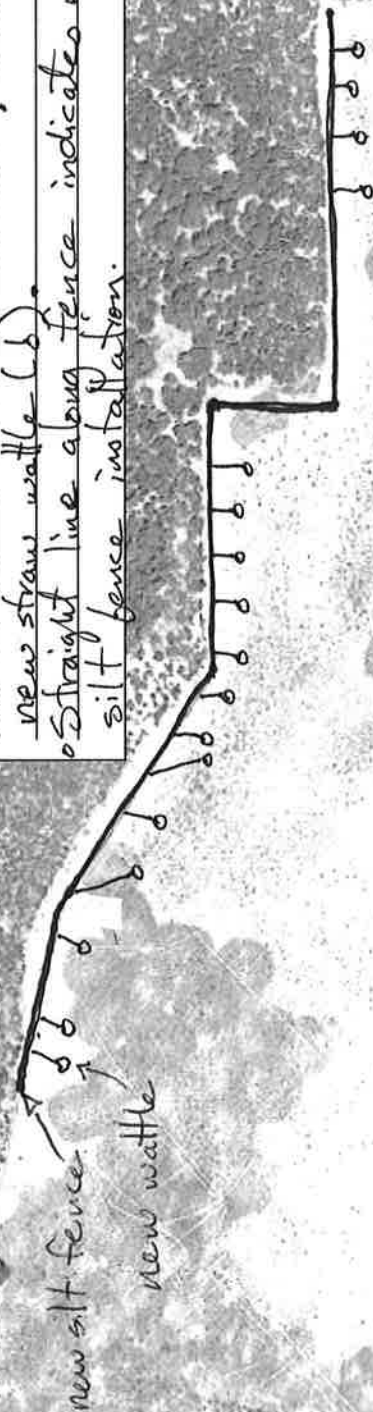
Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

IAR-R47 Erosion Monitoring Date: 10/6/2014

- Black line with circle indicates placement of new straw wattle (b).
- Straight line along fence indicates new silt fence installation.

new wattle

new straw wattles (b)
o straight line along fence indicates new
silt fence installation.

[illegible]

ESCA RP Erosion Monitoring Form

Conducted By: JTALLIS

MRA: IAR - Development Parcel

Monitoring Date: 10/6/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine Other Pre-Winter Repairs

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	New wattles installed as per map.		
Blanket	None		
Silt Fence	None		
Sand Bags	New sand bags installed as per map.		

2. Are there signs of water erosion? Y N - N/A

Rilling - gully Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: Addressed w/ sand bags and wattles

3. Are there signs of wind erosion? Y N - N/A

Loss of fines on surface Dunes - Soil on leaves - Other

Comments: Driving routes marked out in Southern development parcel to limit soil disturbance.

4. Are there areas of ponding? Y N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe: N/A

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

IAR-Devel. Parcel/NR44 Erosion Monitoring

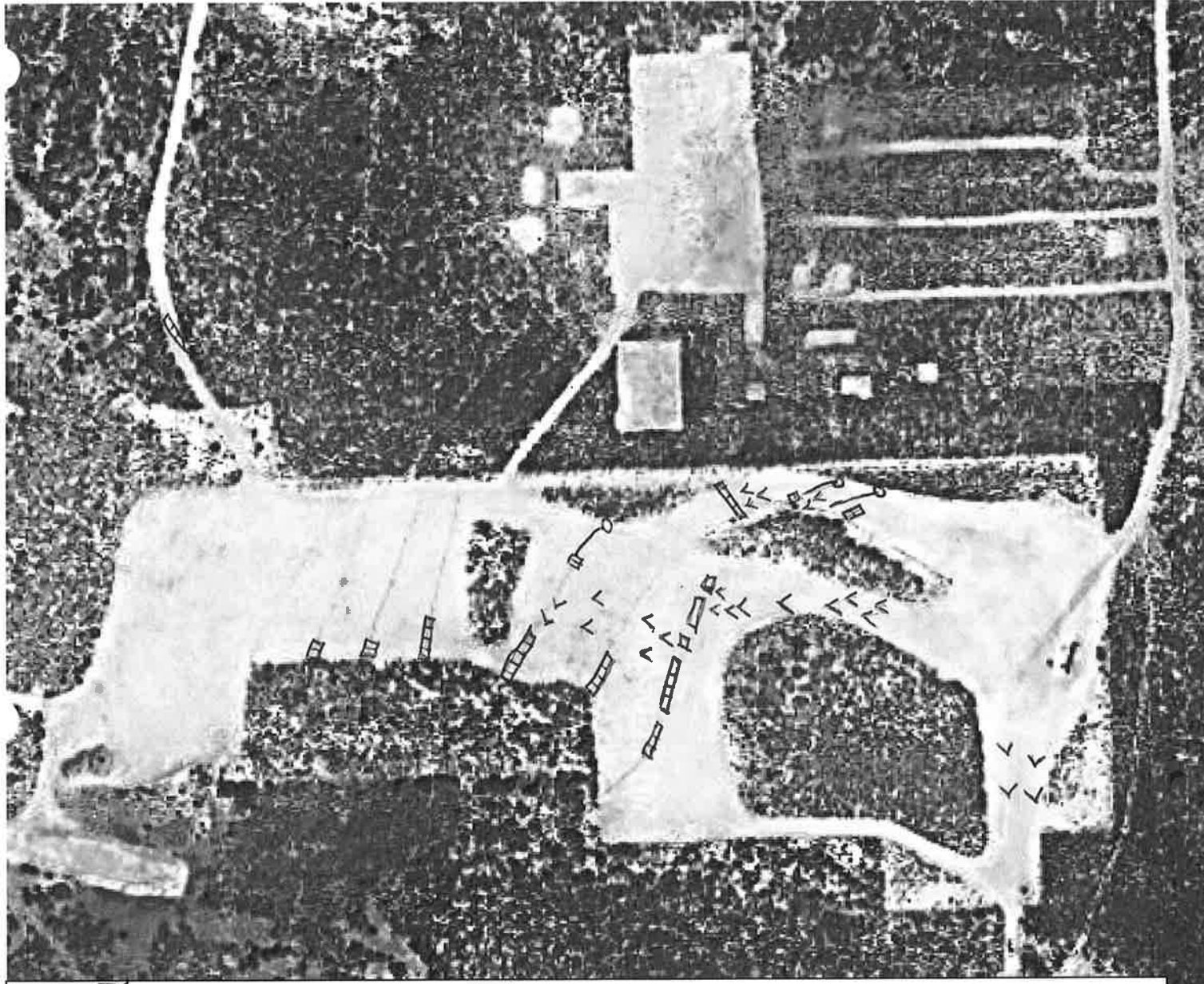
Date: 10/6/2014

□□□ = Sand bag cross bar installed

✓ = sand bag chevron installed
or riprap

— = straw wattle installed

⊠ = erosion blanket
or riprap



ESCA RP Erosion Monitoring Form

Conducted By: J Tallis

MRA: IAR - Devel. Parcel

Monitoring Date: 10/27/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>Not inspected</u>		
Blanket	<u>Not present</u>		
Silt Fence	<u>Not present</u>		
Sand Bags	<u>N</u>	<u>Y</u>	<u>Recent 1/4" rain event on 10/25/14 caused sand to build up behind sand bag chevrons and in some cases to run around them. Sand was removed from behind chevrons and more bags were added.</u>

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: See above

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y / N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

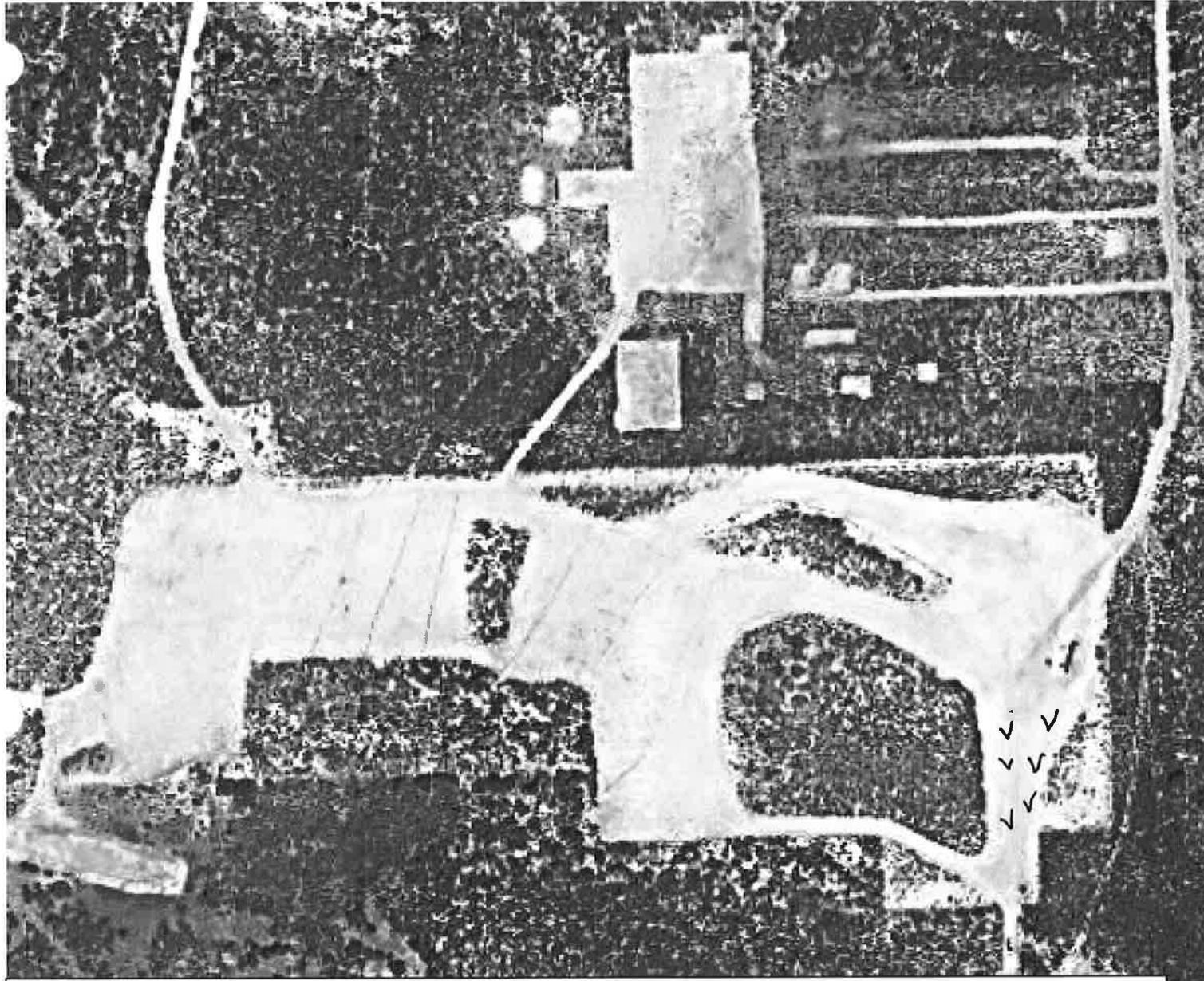
No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47. See photos

IAR-Devel. Parcel/NR44 Erosion Monitoring

Date: 10/27/2014

"<" indicates location
of acquired sand
by chevron.



ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis

MRA: SEA - Blue Line Rd.

Monitoring Date: 11/3/2014

Type of Monitoring: Pre-rain event ☒ Post rain-event ☐ Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	-		
Blanket	-		
Silt Fence	-		
Sand Bags	-		
Rolling Dip	Y	N	Located near Watkins Gate west Gate.

2. Are there signs of water erosion? ☒ Y ☐ N ☐ N/A

☒ Rilling ☐ gullying - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: Minor rilling along Blue Line rd at north end.

3. Are there signs of wind erosion? ☒ Y ☐ N ☐ N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding?

Y ☒ N ☐ Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, ☒ not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis

MRA: IAR - R47

Monitoring Date: 3 Nov. 2014

Type of Monitoring: Pre-rain event (Post rain-event) Routine - Other

1. Existing Erosion/Sediment Control Measures Present? (Y) or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>Flow around seen at 4 wattles</u>	<u>Y</u>	<u>All four wattles repaired by placing sand bags to prevent run around</u>
Blanket	<u>One small gully seen on escarpment</u>	<u>Y</u>	<u>Photos taken</u>
Silt Fence	<u>Y</u>	<u>N</u>	
Sand Bags	<u>Y</u>	<u>N</u>	

2. Are there signs of water erosion? (Y) N - N/A

(Rilling) (gullying) (Loss of fines from surface) (Sand/silt deposit in fans/basins)

Comments: See map

3. Are there signs of wind erosion? Y (N) - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? (Y) / N Size and depth:

lowest point of R47 it appears there was about 6" of ponded water.

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

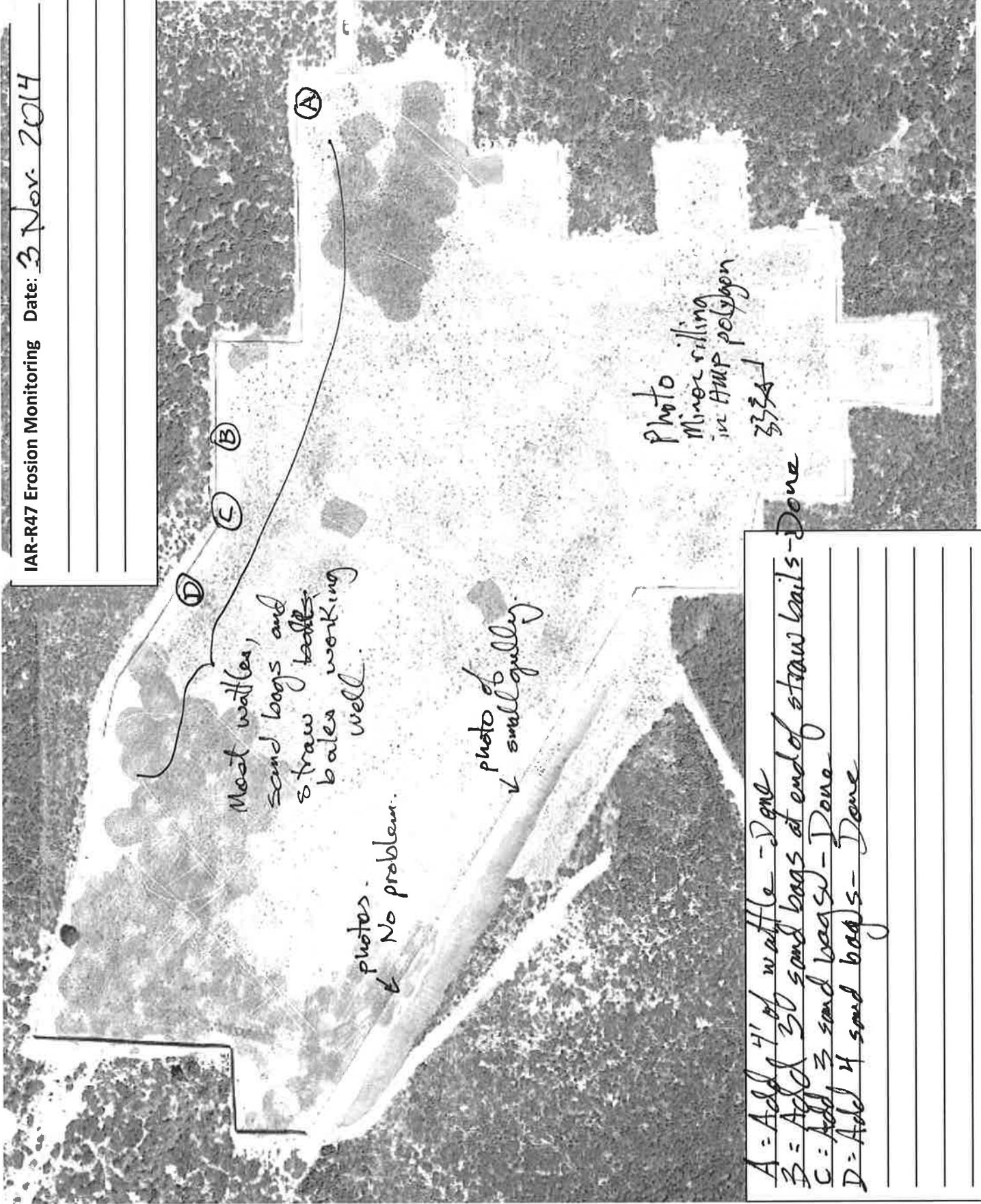
Describe:

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

IAR-R47 Erosion Monitoring Date: 3 Nov. 2014



D

C

B

A

Most wattles,
sand bags and
straw bales
working well.

photos.
No problem.

photo of
small gully.

Photo
Minor rilling
in AMP polygon
3334

- A = Add 4' of wattle - Done
- B = Add 20 sand bags at end of straw bails - Done
- C = Add 3 sand bags - Done
- D = Add 4 sand bags - Done

ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis

MRA: IAR - Development Parcel

Monitoring Date: 3 Nov. 2014

Type of Monitoring: Pre-rain event Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>Y</u>	<u>N</u>	
Blanket	<u>N/A</u>		
Silt Fence	<u>N/A</u>		
Sand Bags	<u>N</u>	<u>Y</u>	<u>Most sand bags working well. Many sand bags were moved to function better. More bags needed @ A on way.</u>

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullying - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y - N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

IAR-Devel. Parcel/NR44 Erosion Monitoring

Date: 3 Nov. 2014

A: Water ran around sand bags. Need ~10 more sand bags to direct water into veg.

B: Water eroded around sand bags. Moved bags around to fix problem. Done.

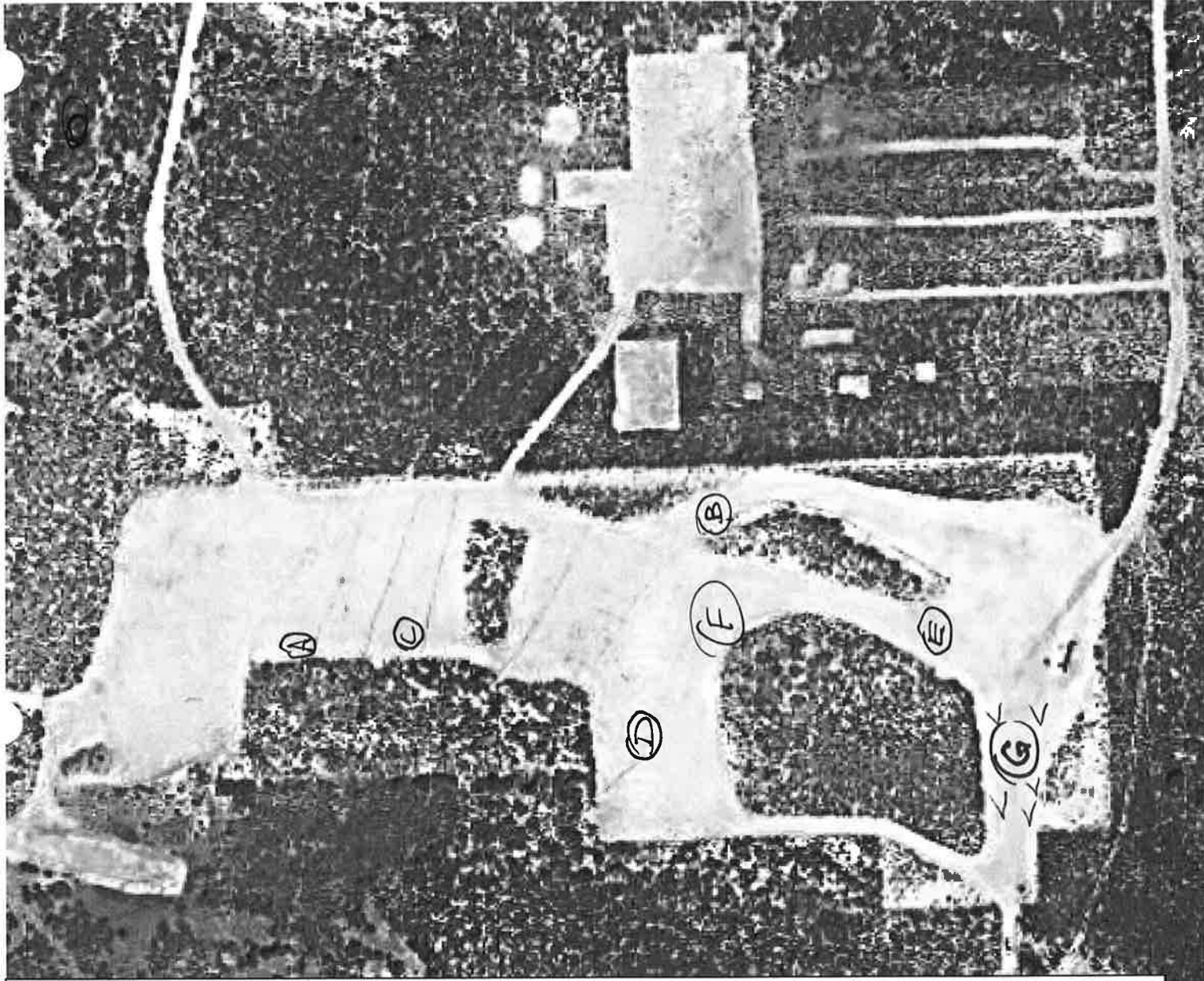
C: Animal had moved sand bags. Fixed sand bag water bar. -Done.

D: Water eroded around sand bags - Fixed

E: Rilling

F: Significant sand deposition in alluvial fans.

G: Many sandbags needed to fix chevrons, water bearing under and around.



ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis

MRA: FEG - Grenade Range

Monitoring Date: 3 Nov 2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>No</u>	<u>Y</u>	<u>On some old wattles water is overtopping. On some newer ones it's running.</u>
Blanket	<u>No</u>	<u>Y</u>	<u>Did staking to secure underneath blanket. More stakes needed.</u>
Silt Fence	<u>N/A</u>		
Sand Bags	<u>No</u>	<u>Y</u>	<u>most sand bags working well. Some needed shoring up behind chevron. This was done. 4 bags need still as per map.</u>

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullying - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: See map

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y - N Size and depth:

only in two of the aquatic features.

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

FEG Grenade Range Erosion Monitoring

Date: 3 Nov. 2014

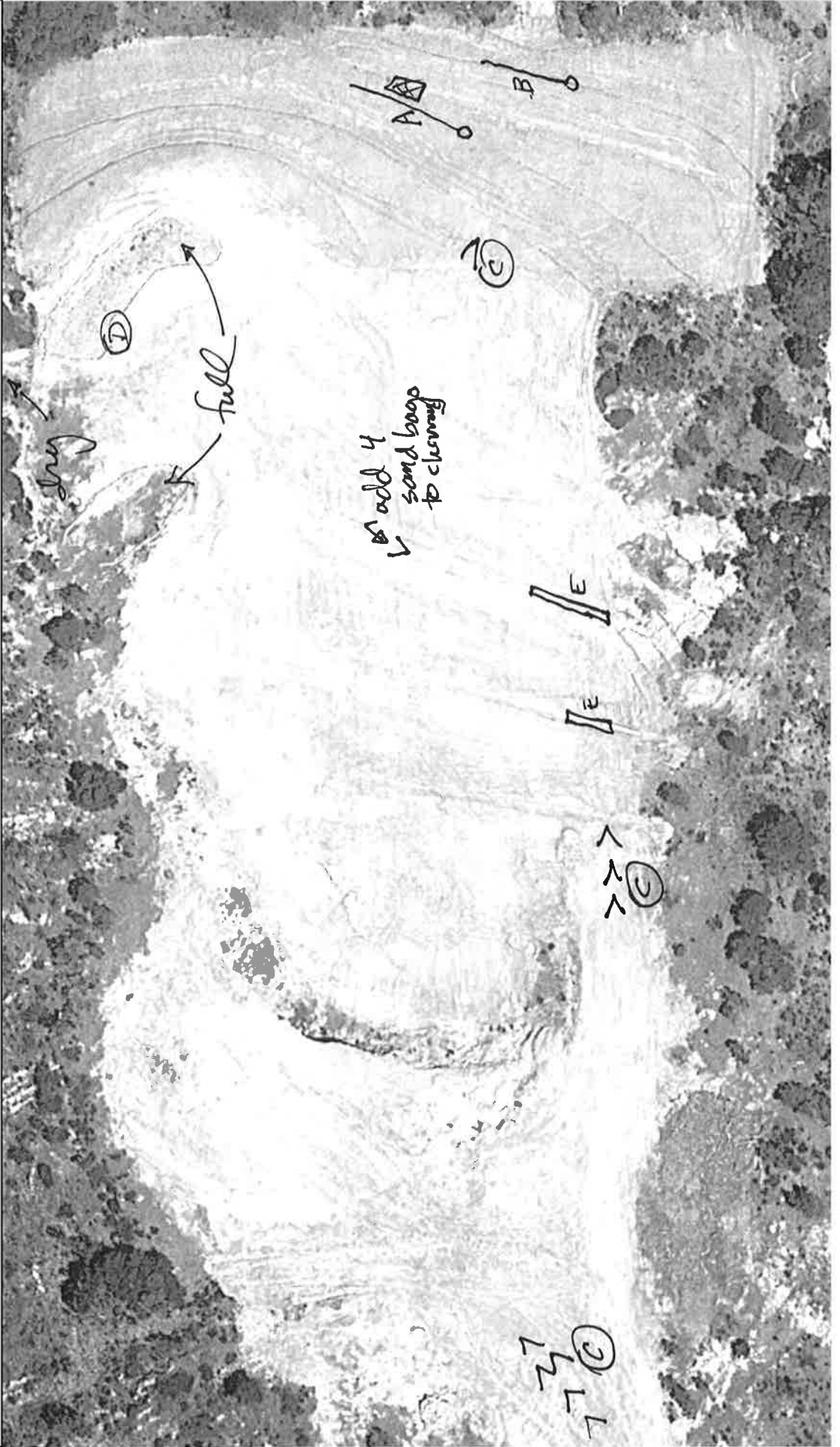
A: New wattles needed, erosion blanket repaired

B: Possible location for new wattle. See photos

C: All chevrons cleaned out after 2" rain event 48 hours ago.

D: Small alluvial fan near aquatic feature

E: Sand removed and placed on water bar



ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis

MRA: IAR - Devel. Parcel

Monitoring Date: 12/1/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>Y</u>	<u>N</u>	
Blanket	<u>-</u>	<u>-</u>	
Silt Fence	<u>-</u>	<u>-</u>	
Sand Bags	<u>Y</u>	<u>N</u>	
Hydro- mulch	<u>Y</u>	<u>N</u>	

2. Are there signs of water erosion? Y N N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y N N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis

MRA: FEG - Grenade Range

Monitoring Date: 12/1/2014

Type of Monitoring: Pre-rain event Post rain-event - Routine - Other

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	Y	N	
Blanket	Y	N	
Silt Fence	-	-	
Sand Bags	Y	N	
Hydro-Seed	Y	N	

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullyng - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding?

Y / N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted not present (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis

MRA: FEG - Grenade Range

Monitoring Date: 12/3/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other 1" rain since last monitoring

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>Y</u>	<u>N</u>	
Blanket	<u>Y</u>	<u>N</u>	
Silt Fence	<u>—</u>		
Sand Bags	<u>Y</u>	<u>N</u>	one sand bag had been driven over where you enter Grenade range - it was fixed.
Hydro-seed	<u>Y</u>	<u>N</u>	significant sprouting from hydroseed!

2. Are there signs of water erosion? Y N - N/A

Rilling - gullying - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis

MRA: IAR - Development Parcel

Monitoring Date: 12/3/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other 1" rain since last monitoring

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	Y	N	
Blanket	—		
Silt Fence	—		
Sand Bags	Y	N	
Water Bars	Y	N	
Hydro Seed			

2. Are there signs of water erosion? Y - N - N/A

Rilling - gully - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: There was some sand deposition here and there but all BMPs were working well.

3. Are there signs of wind erosion? Y - N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding?

Y / N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: J. Tallis

MRA: IAR - Range 47

Monitoring Date: 12/3/2014

Type of Monitoring: Pre-rain event - Post rain-event - Routine - Other 1" rain since last monitoring

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>Y</u>	<u>N</u>	
Blanket	<u>Y</u>	<u>N</u>	<u>on escarpment</u>
Silt Fence	<u>Y</u>	<u>N</u>	<u>Additional soil shoveled against silt in one location where minor erosion -</u>
Sand Bags	<u>Y</u>	<u>N</u>	
Hydroseed	<u>Y</u>	<u>N</u>	<u>Major sprouting from hydro- seed.</u>

2. Are there signs of water erosion? Y N N/A

Rilling - gully - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments:

3. Are there signs of wind erosion? Y N N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding? Y N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

N

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

ESCA RP Erosion Monitoring Form

Conducted By: Jo Tallis

MRA: SEA - Blue Line Rd

Monitoring Date: 12/3/2014

Type of Monitoring: Pre-rain event Post rain-event Routine - Other 1" rain since last monitoring

1. Existing Erosion/Sediment Control Measures Present? Y or N. If N skip to 2.

Type	Functioning Properly? (Evidence of overtopping, undermining or flow around?)	Need repair or correction?	Comments/Notes
Wattles	<u>None</u>		
Blanket	<u>None</u>		
Silt Fence	<u>None</u>		
Sand Bags	<u>None</u>		
<u>water bars</u>	<u>Y</u>	<u>Y</u>	<u>water bars could be larger and there could be more, especially in the North part of Seaside MRA where there is minor rilling/gullying along road.</u>

2. Are there signs of water erosion? Y - N - N/A

Rilling - gullying - Loss of fines from surface - Sand/silt deposit in fans/basins

Comments: See above

3. Are there signs of wind erosion? Y N - N/A

Loss of fines on surface - Dunes - Soil on leaves - Other

Comments:

4. Are there areas of ponding?

Y / N Size and depth:

5. Work Areas

Stockpiles are surrounded with wattles, covered, compacted, not present? (Circle applicable)

Describe:

6. Do you have other erosion concerns?

No

Note: Photograph all BMPs and areas where flow might become concentrated. In IAR photograph the steep, bare parts of the development parcel adjacent to range 47.

Appendix E - Erosion Monitoring and Maintenance Photo-documentation



Photograph 1

*Future East
Garrison MRA
Grenade Range*

Wattles installed in 2013 continue to function well in this location. Most flow has since been diverted away using water bars.

30 January 2014



Photograph 2

*Future East
Garrison MRA
Grenade Range*

2013 hydromulch continues to function properly, dispersing and slowing sheet flow.

30 January 2014

Appendix E - Erosion Monitoring and Maintenance Photo-documentation



Photograph 3

*Interim Action
Ranges MRA
Development Parcel*

New sand bag chevrons installed to slow water and prevent gully formation.

24 February 2014



Photograph 4

*Interim Action
Ranges MRA
Development Parcel*

New sand bag chevrons installed to slow water and prevent gully formation.

24 February 2014

FORA ESCA Remediation Program

Appendix E - Erosion Monitoring and Maintenance Photo-documentation



Photograph 5

*Seaside MRA
Blue Line Road*

Early signs of gulling at north end of Seaside MRA.

27 February 2014



Photograph 6

*Seaside MRA
Blue Line Road*

Rolling dip draining to right improved by Army.

27 February 2014

FORA ESCA Remediation Program



Appendix E - Erosion Monitoring and Maintenance Photo-documentation



Photograph 7

*Interim Action
Ranges MRA
Range 47*

Erosion blanket
natural
degradation on
escarpment, 1.5
years after
installation.

25 August 2014



Photograph 8

*Interim Action
Ranges MRA
Range 47*

Erosion blanket
natural degradation
on escarpment, 1.5
years after
installation.

25 August 2014

FORA ESCA Remediation Program

Appendix E - Erosion Monitoring and Maintenance Photo-documentation



Photograph 9

*Interim Action
Ranges MRA
Development
Parcel*

New sand bags
installed to form a
water bar to
redirect flow.

6 October 2014



Photograph 10

*Interim Action
Ranges MRA
Development Parcel*

New sand bags
installed to form
water bar to redirect
flow into vegetated
area.

6 October 2014

Appendix E - Erosion Monitoring and Maintenance Photo-documentation



Photograph 11

*Future East
Garrison MRA
Grenade Range*

Whole escarpment hydroseeded with wood fiber mulch, mycorrhizal inoculant, fertilizer, and native local seed to reinforce erosion control blanket.

11 November 2014



Photograph 12

*Future East
Garrison MRA
Grenade Range*

Two acres of grenade range hydroseeded with wood fiber mulch, mycorrhizal inoculant, fertilizer, and local native seed.

11 November 2014

Appendix E - Erosion Monitoring and Maintenance Photo-documentation



Photograph 13

*Future East
Garrison MRA
Grenade Range*

Hydroseed
beginning to
sprout on east
facing slope.

3 December 2014



Photograph 14

*Future East
Garrison MRA
Grenade Range*

Sand bag chevrons
holding water
shortly after it
stopped raining.

3 December 2014