

# FORTIFICATION CREEK PLANNING AREA ANNUAL MONITORING REPORT 2015

## INTRODUCTION

The Decision Record (DR) for the Fortification Creek Planning Area (FCPA) Resource Management Plan Amendment (RMPA) was signed on August 5, 2011. The RMPA established a performance based approach for oil and gas development within the FCPA. Performance standards were identified to conserve the Fortification elk herd and ensure successful reclamation leading to ecosite restoration.

The RMPA goal for elk is to maintain a viable elk herd across the FCPA utilizing their seasonal ranges during the appropriate seasons. Reclamation goals include a short-term goal to immediately stabilize disturbed areas and provide conditions necessary to achieve the long term goals; which are (1) facilitate eventual ecosystem reconstruction to maintain a safe and stable landscape and meet the desired outcomes of the land use plan; and (2) vegetative communities within development mirror those of healthy communities as described in the Ecological Site Description (ESD).

The DR established a monitoring team consisting of the State of Wyoming and the BLM. The team reviews monitoring data and makes recommendations to the BLM authorizing officer. BLM reviews performance standards prior to issuing drilling permits. All performance standards must be achieved to BLM satisfaction in order to remain within compliance. If a performance standard is not met and BLM determines it is necessary, then additional permitting will be stopped until the standard is met. This report is the monitoring team's summary of the monitoring data and their recommendations to the BLM authorizing officer.

## BASE LINE

The specific elk performance standards established by the RMPA and their status at the signing of the DR (August 2011) are as follows:

1. The population is maintained at 80% (120) or greater as measured from the Wyoming Game and Fish Department (WGFD) population objective (currently 150). The WGFD 2010 Job Completion Report provides a 2009 post-season population estimate for the Fortification elk herd of 232.
2. Calf production is maintained at least 80% (100:37) of current cow:calf ratio (100:45.5). The initial ratio is based on a 9 year average (2003-2011 WGFD 2010 JCR Table 7 subadults/100 females).
3. Winter calf survival is at least 80% (100:33.6) of current cow:calf ratio (100:42.0). The initial ratio is based on a 9 year average (2003-2011 WGFD 2010 JCR Table 8 subadults/100 females). **Note:** The RMPA DR reported a value of 100:30.9, that value was the adult:calf ratio and not the cow:calf ratio.
4. Next-summer calf survival (calf to yearling) is at least 80% (100:26) of current cow:yrlnng ratio (100:32.4). The initial ratio is based on a 9 year average (2003-2011 WGFD 2010 JCR Table 7 yearling males (x2)/100 females).
5. Fidelity to the FCPA seasonal ranges (yearlong, calving, and crucial winter) remains greater than 80% of current levels. The seasonal crucial range fidelity evaluates the percent collared elk use within the FCPA seasonal ranges (calving, crucial winter, and yearlong) of the full seasonal ranges during the crucial seasons. Baseline crucial winter range use was 87%; the 80% of that level is 69%. Baseline calving range use was 88%; the 80% of that level is 70%. Baseline yearlong range use was 71%; the 80% of that level is 57%.
6. Security habitat is maintained at 80% or greater than baseline levels within the crucial ranges and the yearlong range for each geographic phase. Acres of security habitat within the FCPA

in August 2011 included 29,759 acres within the calving range, 20,435 acres within crucial winter range, and 45,354 acres within the full yearlong range (including calving and crucial winter).

- Habitat effectiveness (local – Plan of Development [POD]) is maintained at 80% or greater of current levels within the crucial ranges and the yearlong range.

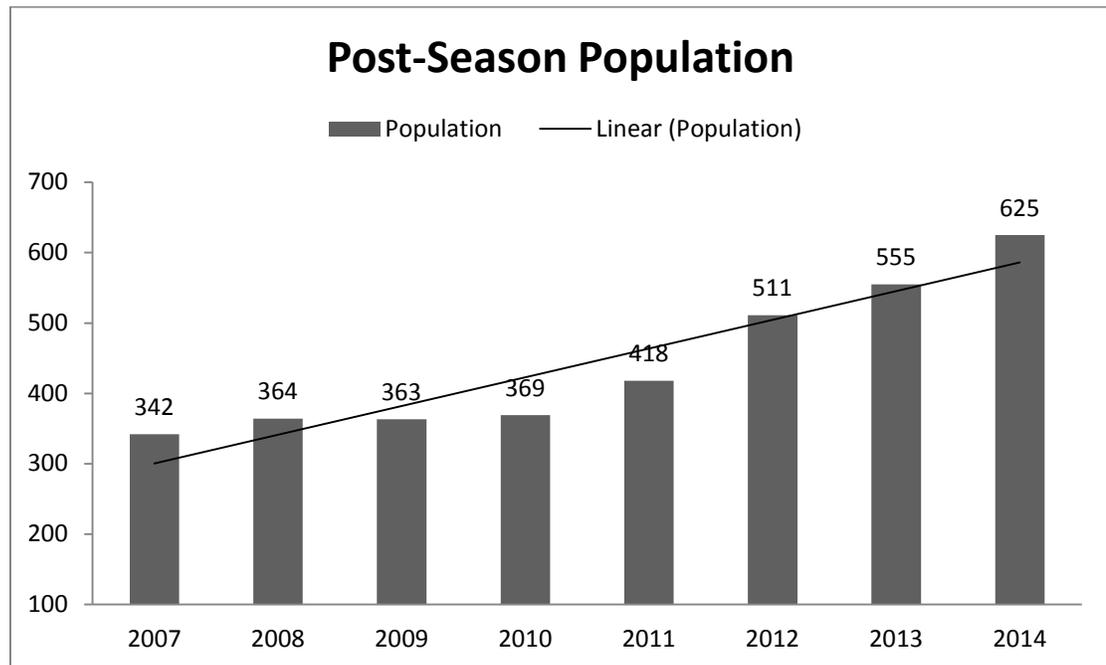
### 2015 DEVELOPMENT

No construction or drilling activities occurred during 2015. Anadarko Petroleum sold their leases to Carbon Creek Energy. Neither Carbon Creek nor Yates Petroleum has development plans for 2016. Approved drilling permits related to the authorized Plans of Development (POD) (Camp John SMA Year 1, Camp John SMA Year 2, Elsie, and Queen B) are approaching their expiration dates unless extensions are requested and granted

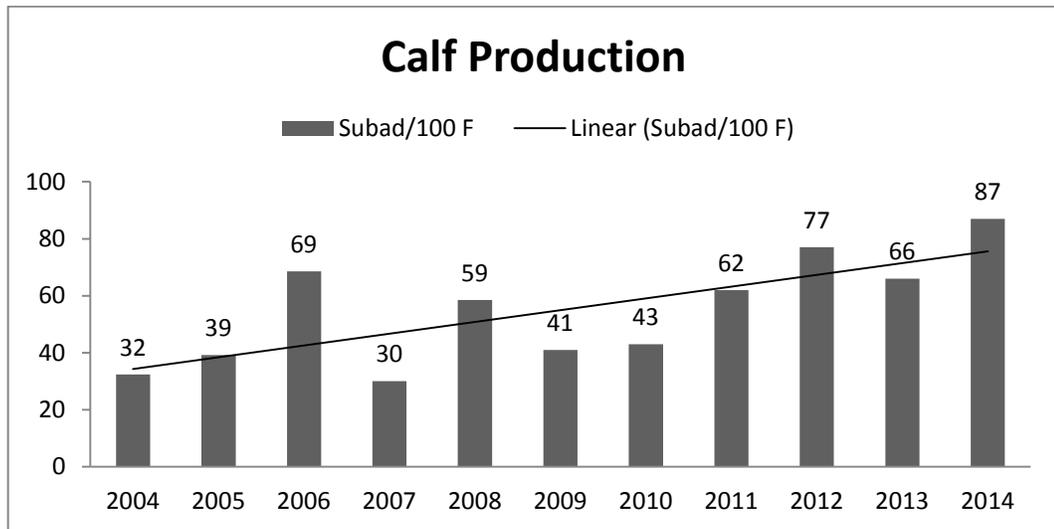
### 2015 PERFORMANCE STANDARDS STATUS

The most recent full season data available, through calving season 2015, was analyzed to calculate the status of the elk performance standards in pre-hunting season 2015; which is as follows:

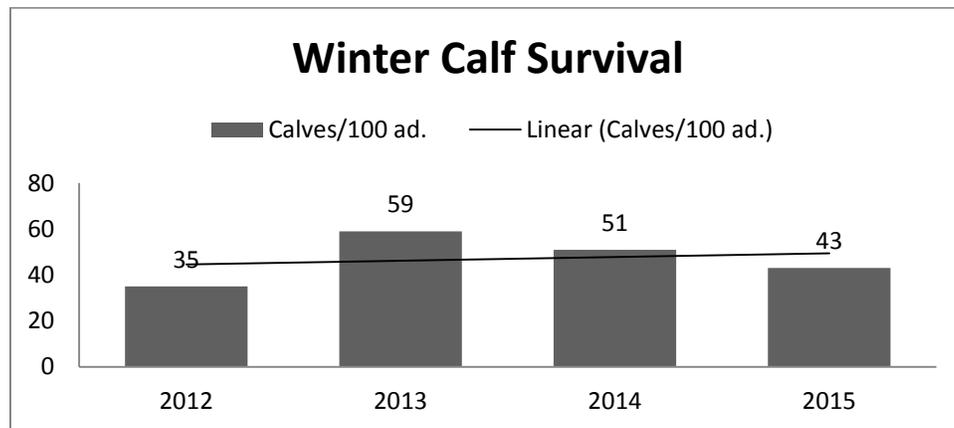
- Population:** The 2014 post hunt population estimate was 625 (WGFD 2014 Job Completion Report (JCR)). The WGFD changed population models in 2012; data for earlier years reflect the new model. WGFD believes the new model produces a high estimate for small populations such as Fortification; while the population estimate may be high, annual differences and trends should be accurately reflected. The population has been increasing since the RMPA was completed and prior. The WGFD population objective is 150.



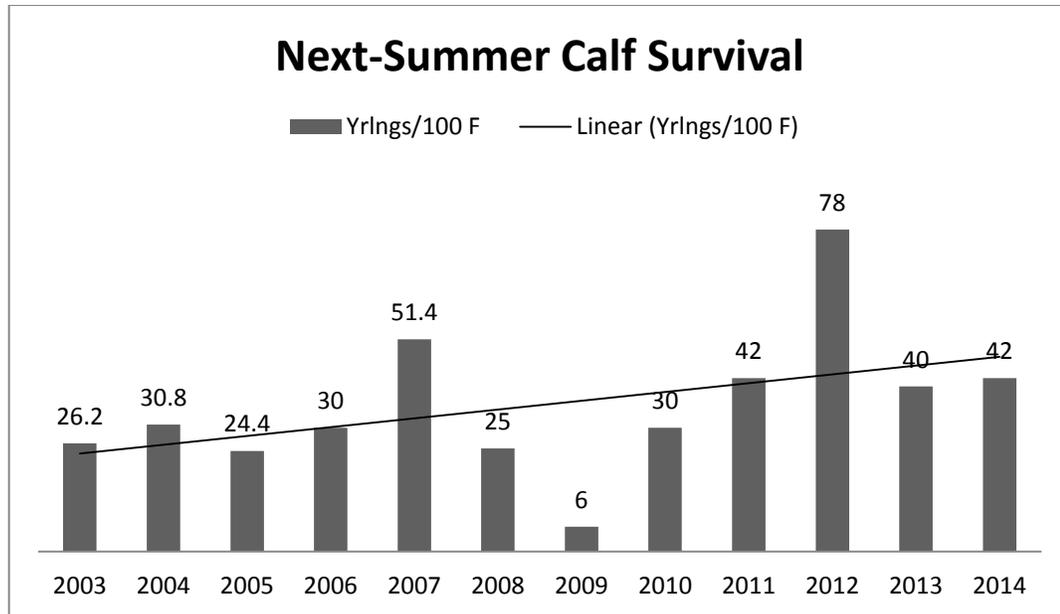
- Calf production:** The estimated post-season 9-year average cow:calf ratio is 100:59 (2006-2014 WGFD 2014 JCR, subadults/100 females). The ratio indicates an increase of 13 calves per 100 cows from the average reported in the RMPA DR (46). Calf production is highly variable from year to year, which is the reason for evaluating an average spread over many years. Annual calf production ranged from 30 calves (2007) to 87 calves (2014) for every 100 cows. The trend is increasing.



3. **Winter calf survival:** A spring helicopter survey was initiated in 2012 to produce a more reliable estimate of the winter calf survival, than basing the estimate on the post hunt ratio. The calf:antlerless adult elk ratio has ranged from 35:100 in 2012 to 59:100 in 2013, the 2015 ratio was 43:100. The ratio is presented as ‘antlerless adults’ versus ‘cows’ as it is difficult to confidently classify elk in the spring (after antler drop and before new antler growth).

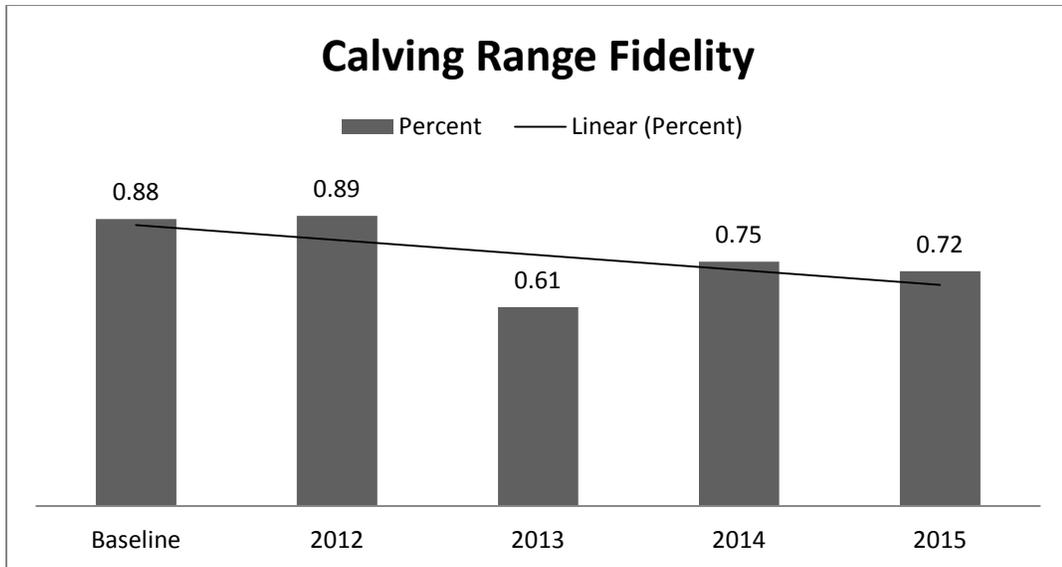


4. **Next-summer calf survival:** Next summer calf survival is estimated from the yearling male (doubled) to 100 female estimate from the postseason classification (WGFD 2014 JCR). The 2014 estimated 9-year average cow:yearling ratio was 100:38 (2006-2014 Yr. Males (x2)/100 females). The ratio indicates an increase of 6 yearlings per 100 cows from the 2011 9-year average (32).

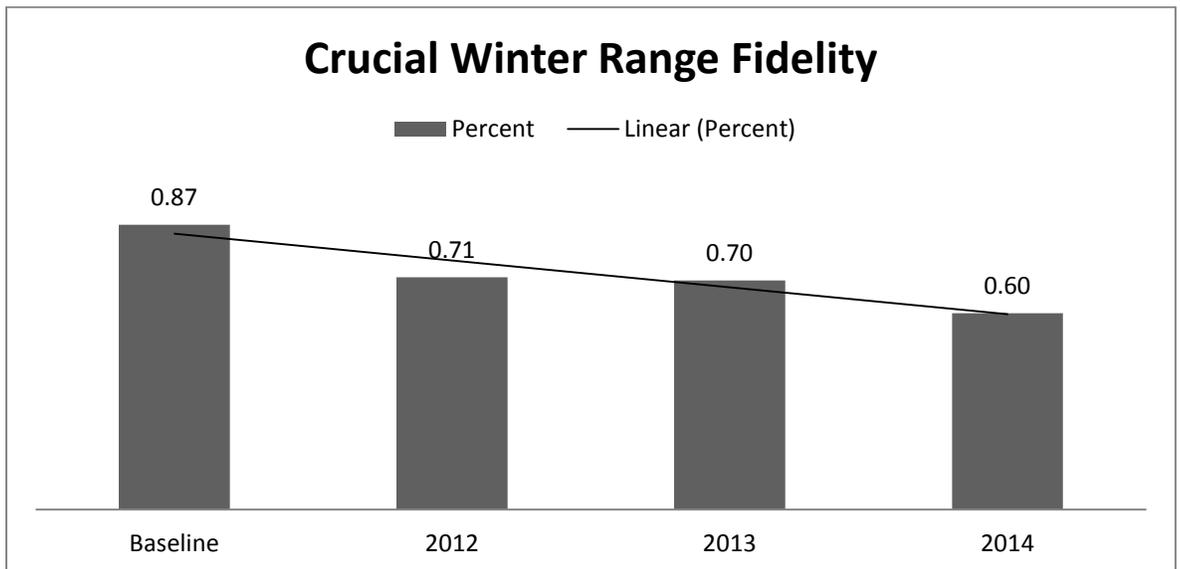


5. **Seasonal range fidelity:** Seasonal range fidelity was reported in the RMPA DR as the percentage of collared elk locations within the appropriate FCPA seasonal range (calving, crucial winter, and yearlong) during the appropriate season as compared to the collared elk locations for the full seasonal range (within and outside of the FCPA). Since the DR, subsequent analyses by Western Ecosystems Technology (WEST) had evaluated range fidelity within the FCPA seasonal ranges compared to the whole FCPA and the whole herd unit, but not the whole seasonal range. This report returns to the original intent of the DR and evaluates the FCPA seasonal range use compared to the full seasonal range. This is the appropriate metric as WGFD designated the seasonal ranges based upon historical elk use during the appropriate seasons; i.e. historically the elk primarily inhabited the calving range during the calving season and not necessarily the entire FCPA or entire herd unit.

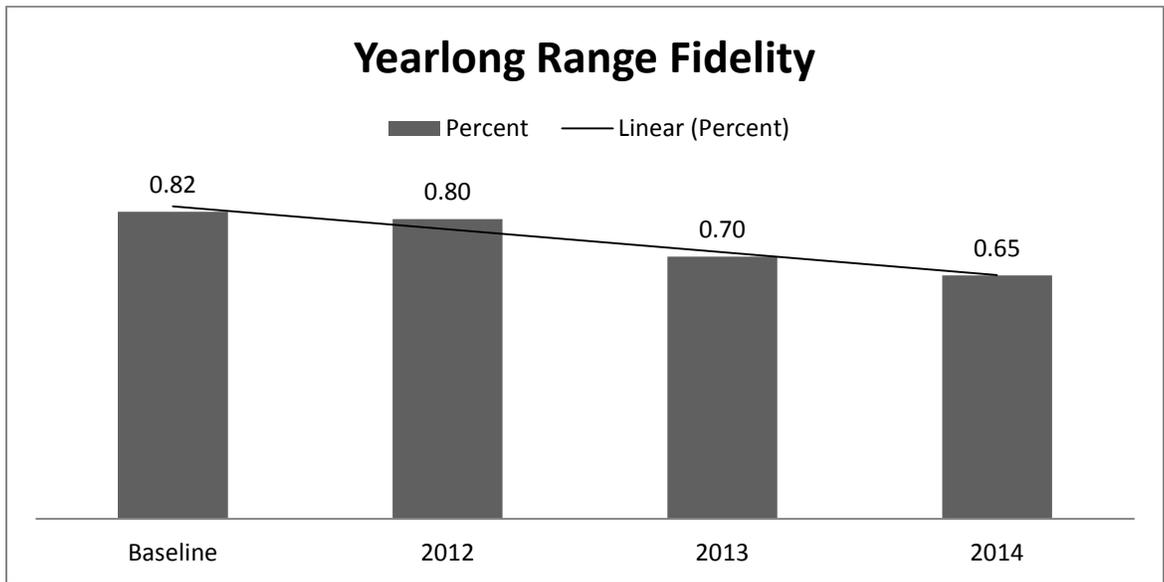
During the 2008 through 2011 calving seasons 88% of the full calving range elk locations were within the FCPA calving range (10,035 of 11,409 locations) (BLM 2011). The eighty percent use level is 70%. The lowest fidelity to the calving range was in 2013 when 61% of the full calving range locations were within the FCPA calving range; the greatest calving range fidelity was the 2012 season with 89% of the full calving range locations within the FCPA calving range. Fidelity to the FCPA calving range exhibits a downward trend that is approaching the 80% of the baseline fidelity.



During the 2008 through 2010 winter seasons, December 1 – April 30, 87% of the full crucial winter range elk locations were within the FCPA crucial winter range (23,765 of 27,356 locations). The eighty percent use level is 70%. The lowest fidelity to the crucial winter range was 2014-2015 when 60% of the winter full crucial winter range locations were within the FCPA crucial winter range. Crucial winter range use during the winters of 2012-2013 and 2013-2014 were similar, with 71% and 70% of the full crucial winter range use being within the FCPA crucial winter range. Overall there is a decreasing trend in crucial winter range use over the winters evaluated. Crucial winter range fidelity has been below (2014) or nearly below (2012 and 2013) the performance standard (70% use) during the last three winters.



From collaring on March 26, 2008 through August 2012, FCPA yearlong range use was 82% of the full yearlong use (98,956 locations out of 120,822); 80% of that use level is 66%. Since completion of the RMPA, FCPA yearlong fidelity has decreased, with the lowest fidelity (65%) in bioyear 2014; which is below the performance standard of 66%.



	Herd Unit Points (elk)	Full Seasonal Range Points (elk)	FCPA Seasonal Range Points (elk)	FCPA seasonal use/Full Seasonal Use Points (elk)
<b>Calving</b>				
Baseline	12,215 (48)	11,409 (49)	10,035 (35)	0.87 (0.71)
2012	2316 (32)	2,143 (30)	1,919 (25)	0.90 (0.83)
2013	1186 (16)	1,015 (15)	719 (12)	0.71 (0.80)
2014	7237 (42)	5,857 (40)	4,391 (34)	0.75 (0.85)
2015	5824 (31)	4,654 (29)	3,330 (23)	0.72(0.79)
<b>Winter</b>				
Baseline	48,218 (38)	23,765 (38)	27,356 (37)	0.86 (0.97)
2012	5420 (21)	3,458 (21)	2,465 (21)	0.71 (1.00)
2013	26640 (46)	13,054 (44)	9,083 (43)	0.70 (0.98)
2014	28777 (35)	12,822 (32)	7,644 (27)	0.60 (0.84)
<b>Yearlong</b>				
Baseline	127,999 (56)	120,822 (56)	98,956 (55)	0.82 (0.98)
2012	1,7928 (33)	17,682 (33)	14,160 (33)	0.80 (1.00)
2013	70,326 (54)	68,751 (53)	48,052 (53)	0.70 (1.00)
2014	73,987 (43)	70,012 (43)	45,174 (37)	0.65 (0.86)

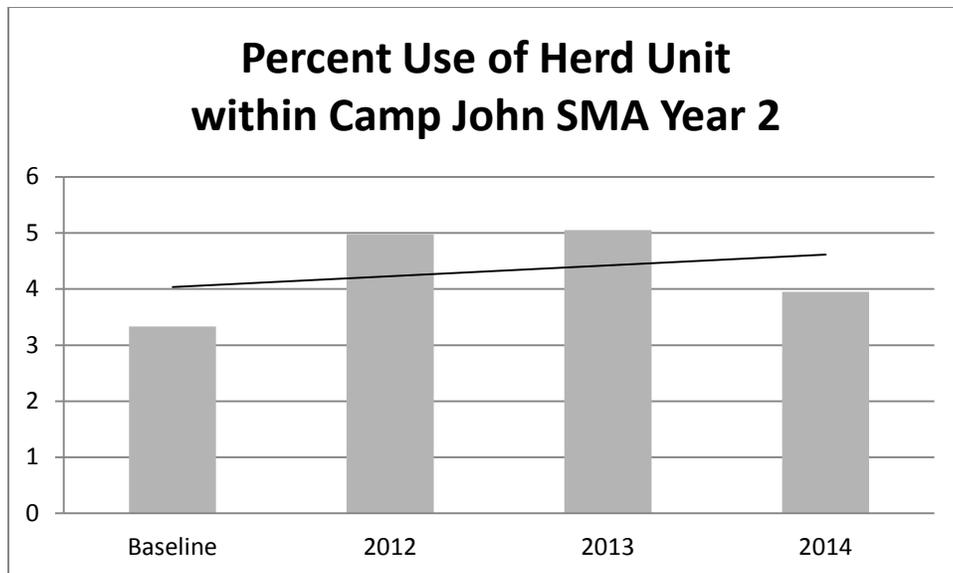
- Security habitat:** Since the August 5, 2011 DR four Federal coalbed natural gas (CBNG) projects have been authorized. Total elk security habitat loss from the four authorized federal PODs (Anadarko's CJU SMA Phase 1 Year 1 and Year2 PODs, and Yates Queen B and Elsie PODs) combined with authorized or pending Wyoming Oil and Gas Conservation Commission (WOGCC) nonfederal permits is 1,101 acres (19.7%) of the baseline elk security habitat in the SE Phase (5,593 acres). Map 1 illustrates the security habitat loss; no additional

projects have been approved and therefore no additional security habitat has been lost since 2013. As the undrilled approved permits expire, available security habitat will increase.

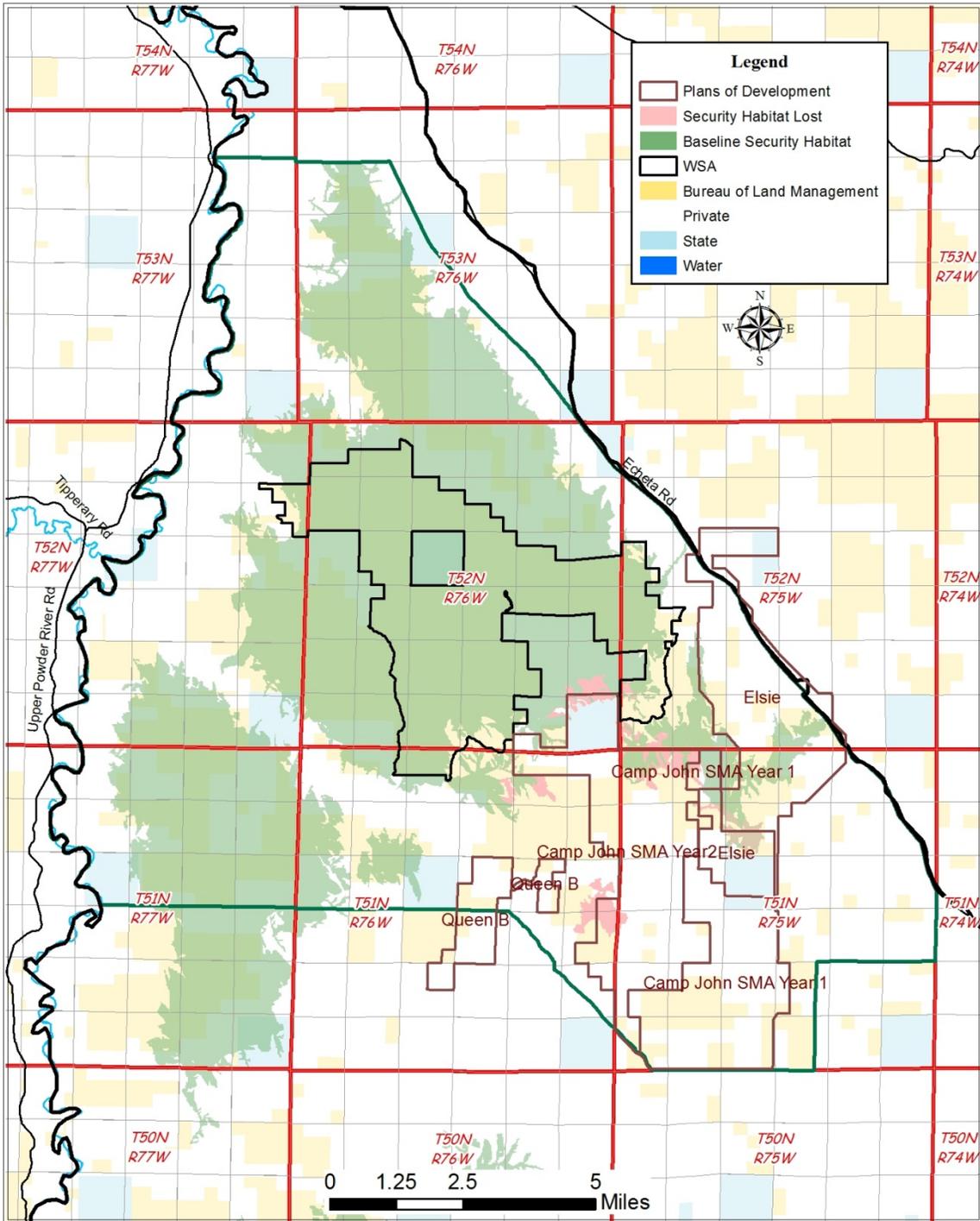
- Habitat effectiveness:** The habitat effectiveness results are going to focus on Camp John SMA Phase 1 Year 2 POD, as this POD area has consistently held the highest density of elk relocations for the four CBNG projects analyzed within the FCPA. It is the only POD that has seen construction, drilling, and producing CBNG wells. It also contains the two non-federal oil wells drilled by Ballard Petroleum.

Camp John SMA Phase 1 Year 2: The biological year with the lowest elk use was 2008, part of the baseline, with 2.4% (1,040/42,886) of the herd unit data points within the POD area. Overall the baseline use within the POD area was 3.3% of the herd unit locations (4,838/145,442). Elk use has been higher post Decision Record, with a range from 3.9% in biological year 2014 (2,920/73,987 points) to 5.0% of the herd unit data points in biological years 2012 (893/17,927). A similar percentage of collard elk used the POD area every year (baseline=43 %, 2013=44%, and 2014=42%) except 2012 (73%). The POD area is used year round.

Anadako drilled ten CBNG wells in the southern portion of the POD in 2013; Ballard Petroleum drilled a non-federal oil well, in the same area, along Fortification Creek in 2013 and a second in 2014 at the same location. The pattern of use has remained similar over the years, and near the new wells. The highest density of use has historically been and continues to be in the northern third of the POD area which is away from the wells and Fortification Road; greater than 0.75 miles from the northern most wells.



# Map 1. Fortification Creek Planning Area Security Habitat Loss Through Bio Year 2013



**Reclamation:** Anadarko drilled ten wells and constructed infrastructure in Camp John SMA Phase 1 Year 2 POD during 2013. BLM monitored reclamation compliance, in May 2014, at six of the Camp John unit Federal well sites. At all well sites the disturbance area had been straw mulched and seeded with 12 inch straw wattles below cut slopes. All sites had some vegetation growing; but being so early in the growing season, it could not be determined if the vegetation resulted from the seed mix or from the straw. There were tire ruts at all well locations. Four sites exhibited subsidence, three along buried utility lines and the reserve pits at one location. None of the locations met the first year reclamation standard of being stabilized with the approved seed mix growing.

Monitoring in 2015 showed improved results with one well location not meeting reclamation standards due to a lack of ground cover. The main utility corridor parallel to Fortification Road had areas of subsidence and patches of weeds. Anadarko was able to get the remainder of the well locations and utility corridors stabilized and vegetated.

### 2016 ACTIVITY PLANS

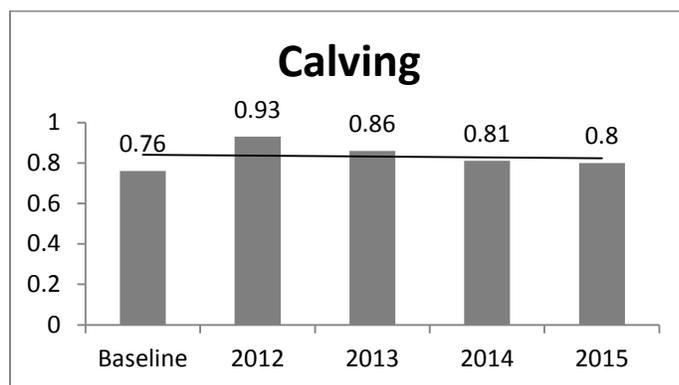
Anadarko sold their holdings to Carbon Creek Energy in 2015. Neither Carbon Creek nor Yates Petroleum has plans to drill additional wells in 2016. The undrilled well permits should expire in late 2015 (Camp John SMU Year 1) and 2016 (Camp John SMU Year 2, Elsie, and Queen B) unless extensions are requested and granted.

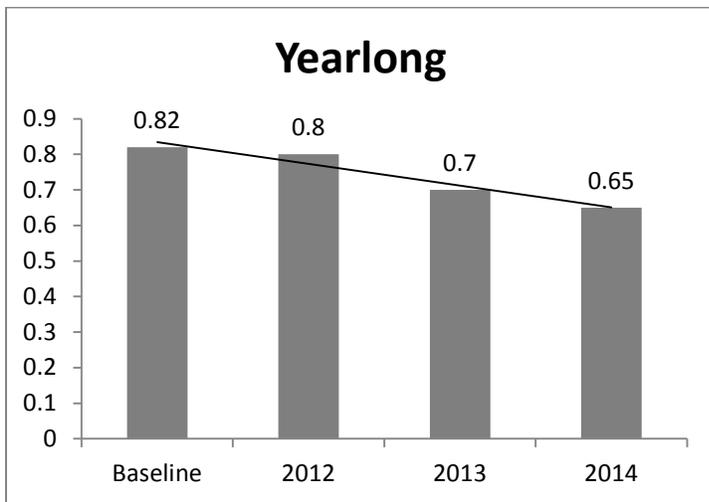
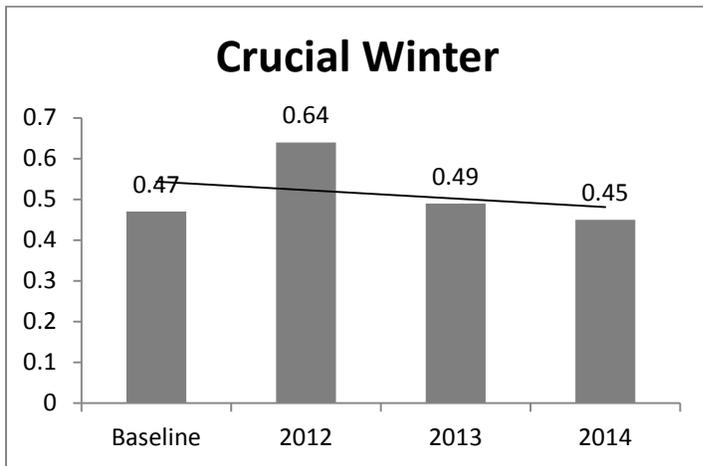
### DISCUSSION

Demographic and use/fidelity parameters can be highly variable from year to year, making it necessary to average them over multiple years. Unfortunately this means it may take several years for a change in trend to be identifiable. This is one of the reasons for a suite of performance standards.

Demographic trends are all increasing whereas range fidelity trends are decreasing. Elk use within the Camp John SMU Year 2 POD area, and all POD areas, has increased since the RMPA DR; therefore especially with the limited mineral activity, development is not likely a factor in the reduced range fidelity. Anadarko's 2013 development activities and the Ballard well site took place in an area of historically low elk use. The decrease in fidelity to the FCPA seasonal ranges is most likely a result of the decreased CBNG activities within the southern yearlong range, and therefore more elk use of the southern range. BLM employees have reported, in recent years, observing more elk within the southern yearlong range than during the height of CBNG development in the southern range.

The full seasonal range use, for the appropriate seasons, was evaluated against the herd unit use, to evaluate the hypothesis that the elk are shifting more to the southern portion of the seasonal ranges outside of the FCPA. Use levels of the calving and crucial winter ranges have remained similar from baseline to post DR, while yearlong range use indicates an overall decreasing trend.





The calving and crucial winter range trends are greatly influenced by their higher level of use during the 2012 calving and winter seasons. Because the demographic parameters indicate a healthy herd and the elk are using the entire crucial ranges at similar or higher levels than the baseline, there is no concern over the declining trend in use of the FCPA seasonal ranges. The range fidelity data reinforces the casual observations that the elk are spreading out and utilizing their full seasonal ranges.

Reclamation with a couple of exceptions is progressing successfully. If Carbon Creek addresses the one well pad and the main utility corridor appropriately, then these areas can also be reclaimed successfully.

**RECOMMENDATIONS**

Presently the authorized activity has not adversely affected the elk herd or reclamation from meeting the RMPA performance standards. Seasonal range fidelity within the FCPA has decreased, but the elk herd is healthy and growing, and the elk are using the full seasonal ranges, inside and outside the FCPA, during the appropriate seasons. The ability to successfully reclaim the authorized disturbance has been demonstrated. At this time there are no performance standard trends suggesting that a change in FCPA management is necessary.