FORTIFICATION CREEK PLANNING AREA
ANNUAL MONITORING REPORT
2012

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 establishes a monitoring team consisting of the State of Wyoming and the BLM. The team will review monitoring data and make recommendations to the BLM authorizing officer. BLM will review 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, column 1 was used from table 8 instead of column 2.
4. Next-summer calf survival (calf to yearling) is at least 80% (100:26) of current cow:Yrlng ratio (100:32.4). The initial ratio is based on a 9 year average (2003-2011 WGFD 2010 JCR Table 7 Yrlng. Males (x2)/100 females).
5. Fidelity to the seasonal ranges (yearlong, calving, and crucial winter) remains greater than 80% of current levels. The seasonal crucial range fidelity will evaluate the collared elk use within the seasonal ranges (calving and crucial winter) during the crucial seasons.
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).

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

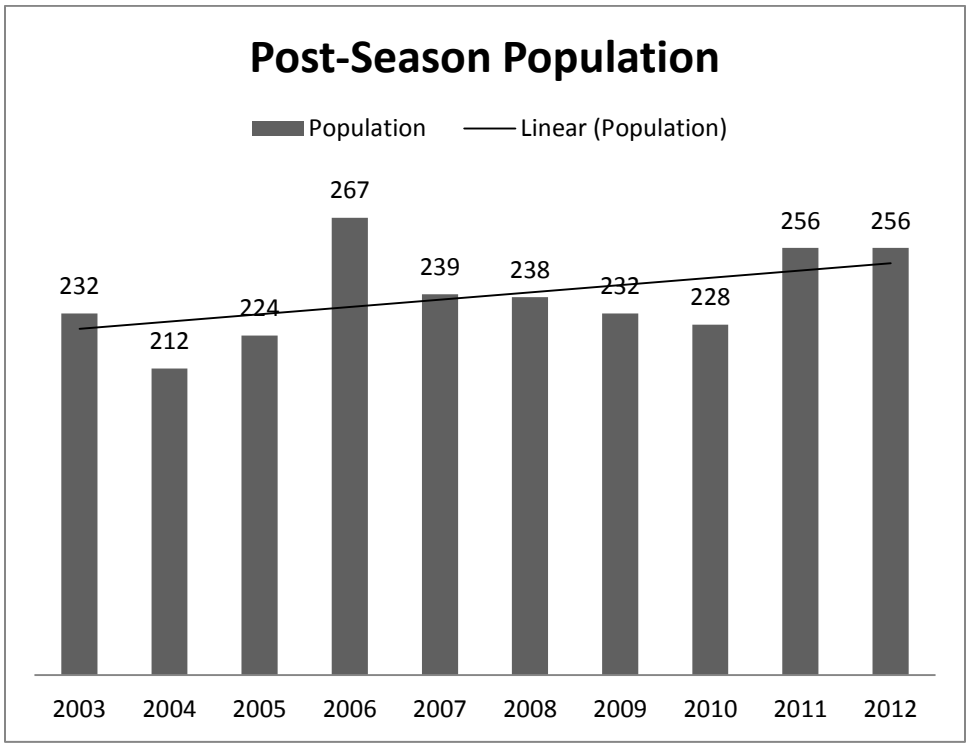
2012 DEVELOPMENT

Three Plans of Development (POD) including 72 Applications for Permit to Drill (APD) have been authorized since completion of the RMPA: Lance Oil and Gas Company Inc.'s Camp John SMA Phase 1 Year 1, Yates Petroleum's Queen B, and Yates' Elsie. Camp John SMA Phase 1 Year 1 was signed November 4, 2011 and authorized 56 APDs (WY-070-EA11-214). 15 APDs were authorized on May 31, 2012 in the Queen B POD (WY-070-EA11-226) and 7 APDS were authorized in the Elsie POD on August 31, 2012 (WY-070-EA11-194). No wells have been drilled nor have any other construction activities taken place, authorized under the RMPA, to date.

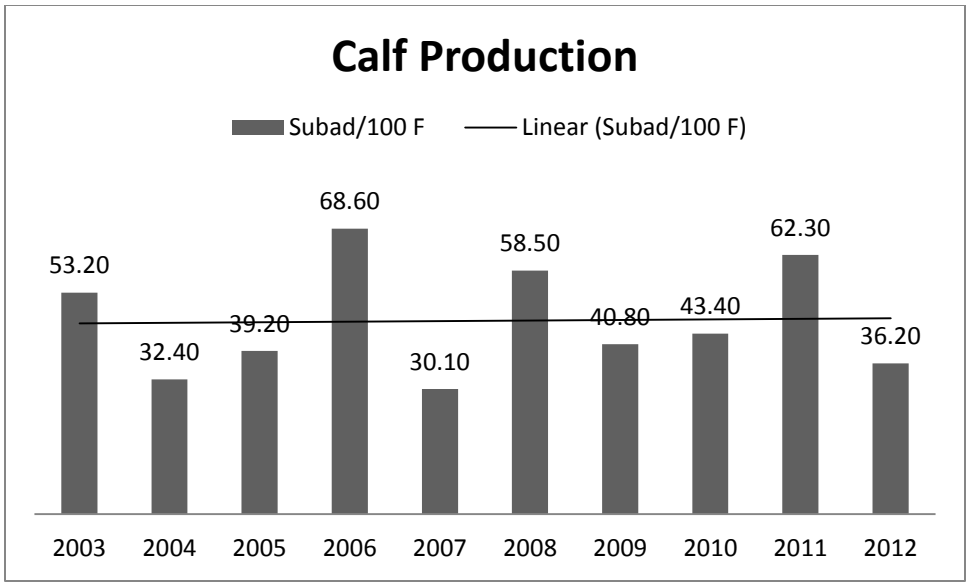
2012 PERFORMANCE STANDARDS STATUS

The most recent data available was analyzed to calculate the status of the elk performance standards in fall 2012; which is as follows:

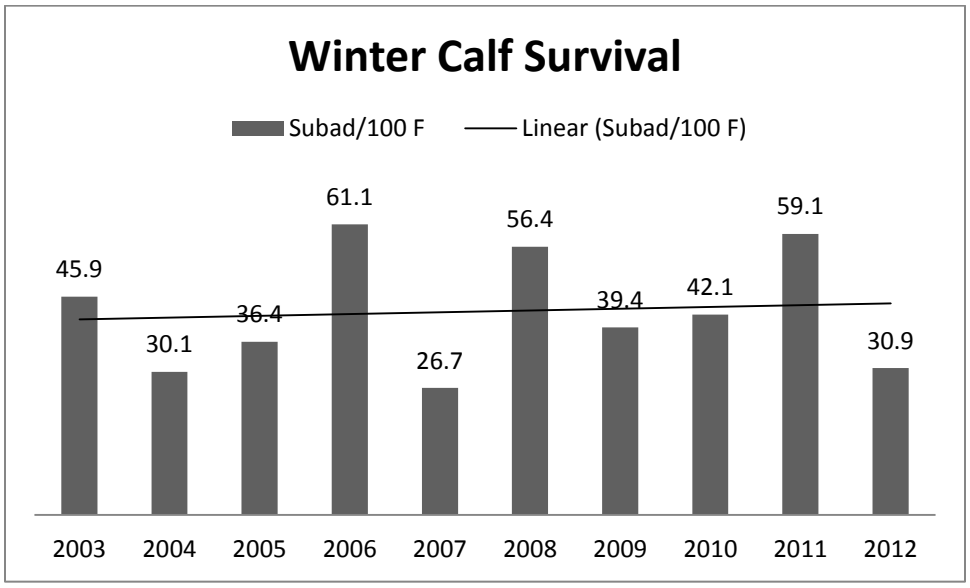
1. **Population**: The WGFD 2011 Job Completion Report provides a 2011 post-season population estimate for the Fortification elk herd of 256 or 71% above the population objective of 150. The population is trending gradually upward.



2. **Calf production**: The estimated 9-year average cow:calf ratio is100:45.7 (2004-2012 WGFD POP-II Table 7, 4/26/2012, subadults/100 females). The ratio indicates an increase of 0.2 calves per 100 cows from the average reported in the RMPA DR. Calf production is highly variable from year to year, the reason for evaluating an average spread over many years. However, the trend is steady. Annual calf production ranged from 30.1 calves (2007) to 68.6 calves (2006) for every 100 cows. Estimated production for 2012 is near the low end of the range (36.2) whereas the 2011 production was near the high end (62.3).

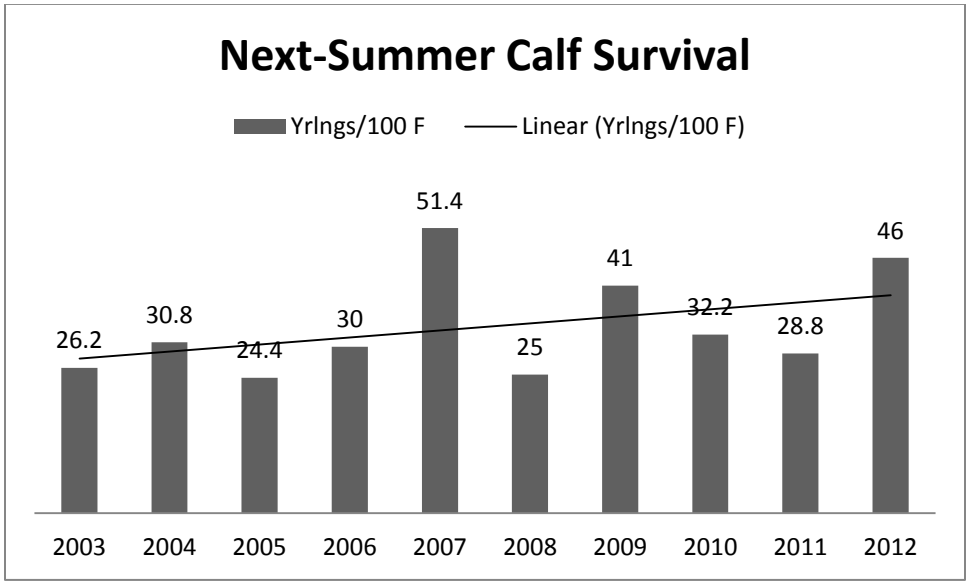


3. **Winter calf survival**: The estimated 9-year average cow:calf ratio is100:42.5 (2004-2012 WGFD POP-II Table 8, 4/26/2012, subadults/100 females). The ratio indicates an increase of 0.5 calves per 100 cows from the average reported in the RMPA DR.

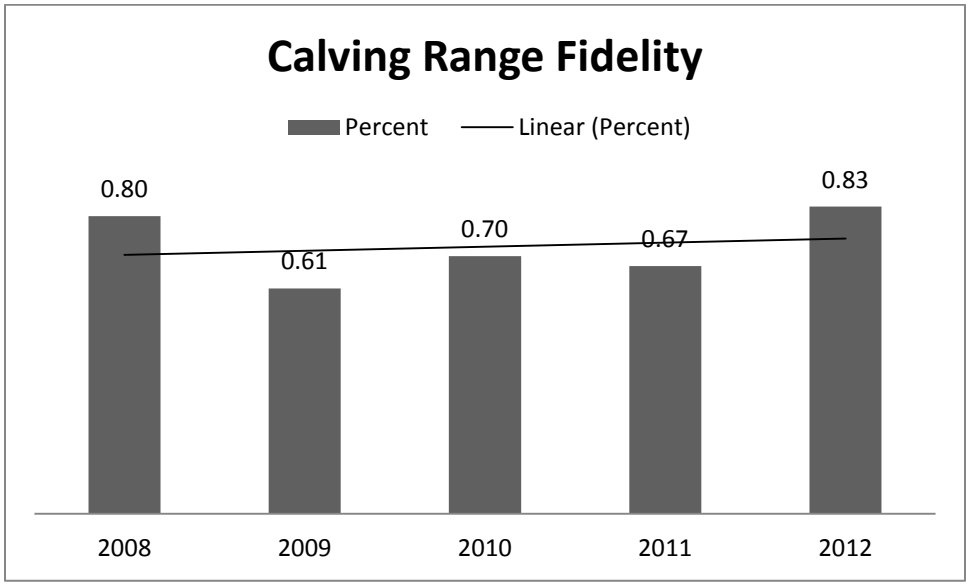


A spring helicopter survey was initiated in 2012 to produce a more reliable estimate of the winter calf survival, than basing the estimate on the end of year ratio as presented above. The calf:antlerless elk ratio was 38 calves per 100 antlerless animals. The ratio is presented as 'antlerless' versus 'cows' as it was difficult to confidently classify elk at this time of year. Last year's calves, even when near cows were difficult, although not impossible to separate out. Individuals not near others, with no size comparison available, were nearly impossible to determine if they were a calf or older so were categorized as "antlerless". It is highly likely that many bulls were also lumped into the antlerless category due to the lack of antlers on some animals at that time of year.

4. **Next-summer calf survival**: The estimated 9-year average cow:yearling ratio is100:34.4 (2004-2012 WGFD POP-II Table 7, 4/26/2012, Yr. Males (x2)/100 females). The ratio indicates an increase of 2 yearlings per 100 cows from the 2011 9-year average.

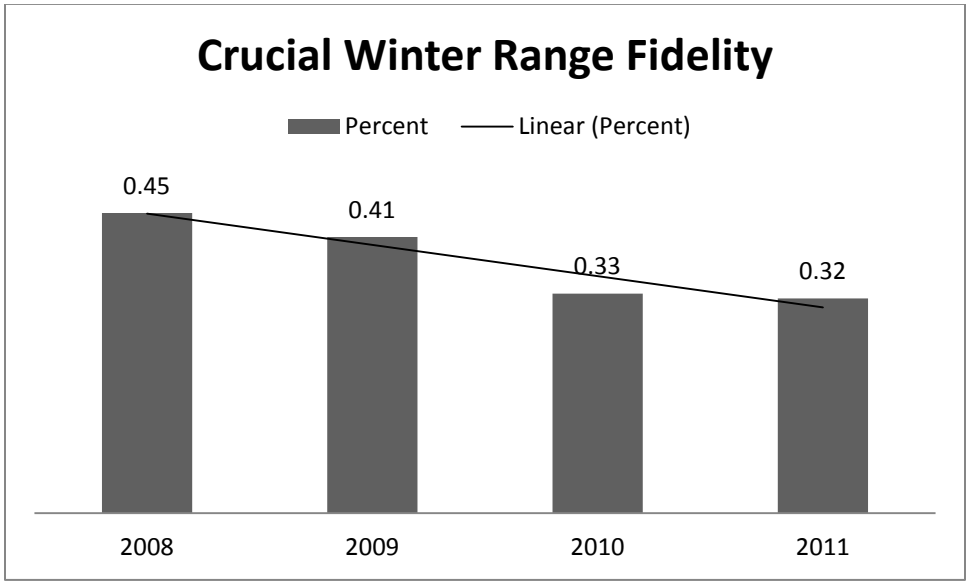


5. **Seasonal range fidelity**: Seasonal range fidelity was first evaluated within the entire herd unit, as reported in the RMPA DR. During the 2008 through 2012 calving seasons 71% of the herd unit elk locations were within the FCPA calving range (12,324 of 17,344 locations). The lowest fidelity to the calving range was in 2009 when 61% of the herd unit locations were within the FCPA calving range; the greatest calving range fidelity was the 2012 season with 83% of the herd unit locations within the FCPA calving range.

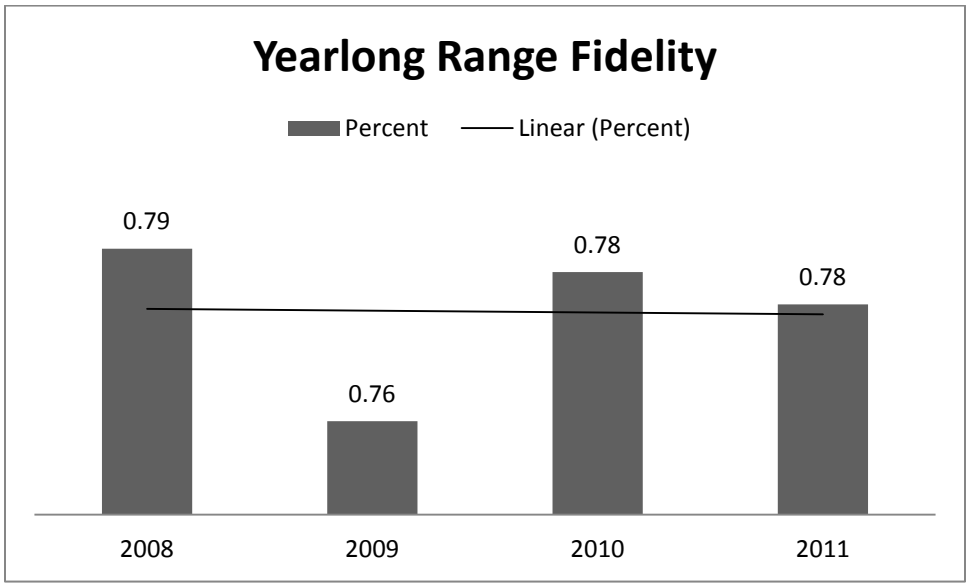


During the 2008 through 2011 winter seasons, December 1 – April 30, 40% of the herd unit elk locations were within the FCPA crucial winter range (24,009 of 60,308 locations). The lowest fidelity to the crucial winter range was 2011-2012 when 32% of the herd unit locations

were within the FCPA crucial winter range; the greatest calving range fidelity was the 2008-2009 winter with 45% of the herd unit locations within the FCPA crucial winter range. Fidelity to crucial winter range over the four winters evaluated has decreased.



During the biological years, May 15 – May 14, 2008 through 2011, 78% of the herd unit elk locations were within the FCPA yearlong range (112,924 of 145,442 locations). Yearlong fidelity was very similar across all four biological years evaluated, ranging from 76% to 79%.



Seasonal range fidelity was also analyzed using elk location data within the FCPA. The FCPA yearlong range contained 71% (90% Confidence Interval [CI]: 61–82%) of the elk locations within the entire FCPA from March 26, 2008 to July 31, 2012. The FCPA calving range contained 88% (90% CI: 81–96%) of the elk locations within the FCPA during the 2008 – 2012 calving seasons. The FCPA crucial winter range contained 52% (90% CI: 41–

63%) of the elk locations within the FCPA during the winter periods between December 2008 through April 2012.

Season	Elk	Locations in FCPA	Locations In Range	Fidelity (%)	90% CI Upper	90% CI Lower	Standard (80%)
Yearlong	92	178,565	127,522	71	61	82	57
Calving	78	13,935	12,324	88	81	96	70
Winter	73	46,036	24,044	52	41	63	42

6. **Security habitat**: Since the August 5, 2011 decision record three Federal CBNG projects have been authorized, the CJU-SMA Phase 1 Year1 POD will result in a loss of 443 acres or 7.9 percent of the elk security habitat within the SE Phase (Map 1). The Queen B and Elsie PODs will not impact elk security habitat. Between July 2011 and January 2012, WOGCC changed the status of 70 nonfederal permits from expired to approved making those wells reasonably foreseeable for future development. Development of these wells would impact another 622 acres of elk security habitat; 299 acres within the SE Development Phase. A total of 742 acres (13%) of the baseline elk security habitat in the SE Phase (5,593 acres) is currently considered affected.

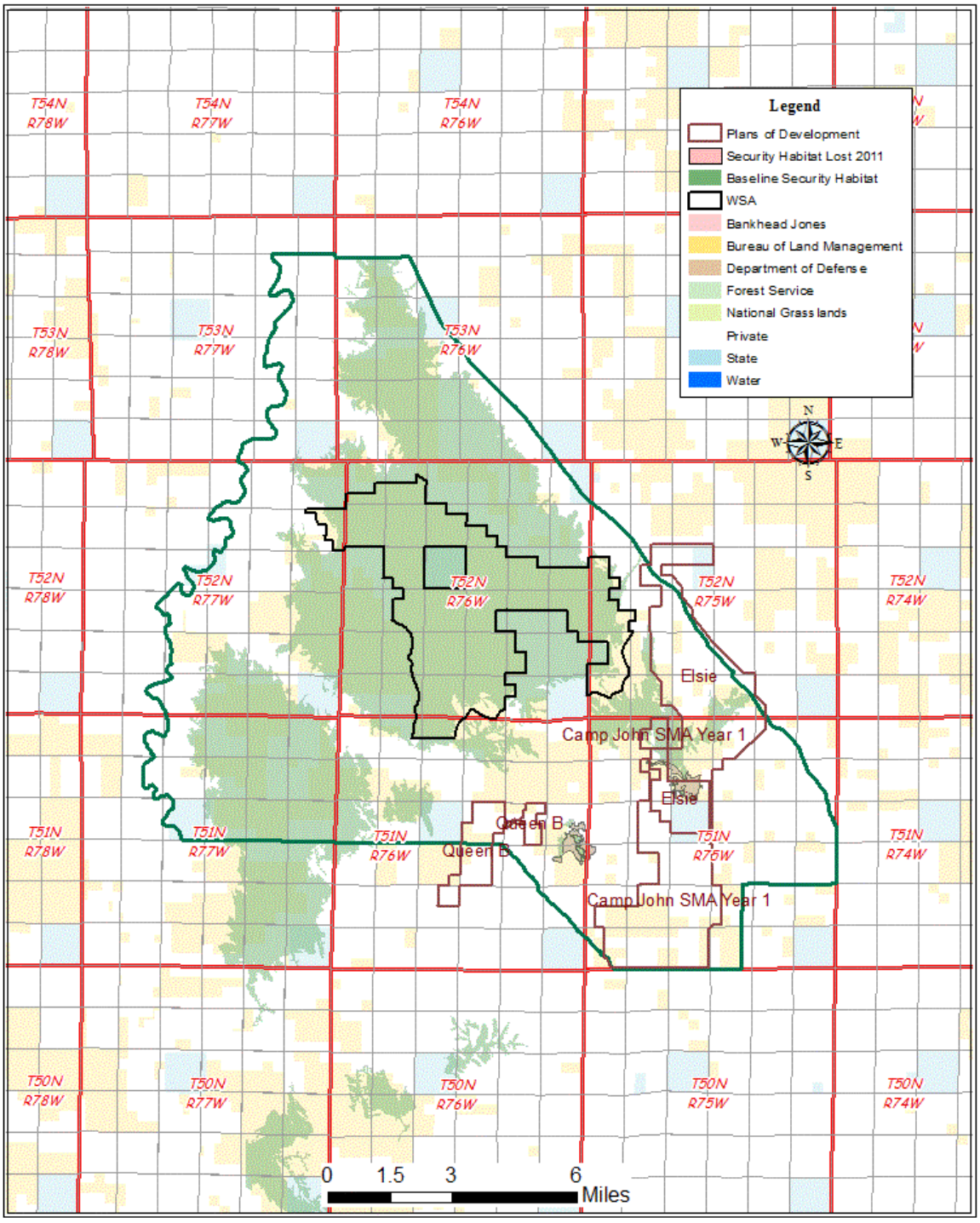
7. **Habitat effectiveness:** Elk use within the three authorized PODs remains low with no recognizable use patterns. Camp John SMA Phase 1 Year 1 POD area received the most elk use in biological year 2008, May 15 –May 14, with 300 elk locations. Camp John elk use represented 0.70% of all locations within herd unit during biological year 2008 (300/42,886). Nearly all of these data points (279) were from a single collared cow (335339), discussed further below. Cow elk 335339 used the Camp John area consistently from May 2008 through January 2009. October 2010 was the only other time that Camp John appeared to receive regular use. Biological years 2009 through 2011, Camp John elk locations represented less than 0.1% of the herd unit locations.

   Elsie accounted for 0.1% of herd unit elk use (22/39,509) in biological year 2009 only, with most use in June and August 2009. Eight elk locations were recorded in the Elsie project area in biological years 2008 and 2011; five locations were recorded in 2010. Elk use was irregular throughout these years.

   Queen B contained 0.2% of the herd unit elk locations (47/30,968) in biological year 2011, and 0.1% in biological years 2008 (37/42,886) and 2010 (31/32,079). The most consistent use was in June and August 2009, and also in October 2010.

   One elk, 335339, accounted for 81% (279/345) of the elk locations within the PODs during biological year 2008. She consistently used the Camp John SMA Year 1 project area during the calving period and summer. That was the only consistent use of the POD areas evident. Seven other collared elk used the three POD areas during biological year 2008; three other elk were located within Camp John SMA Year 1, seven elk were located within Queen B, and

Map 1. Fortification Creek Planning Area
Security Habitat Loss Year One

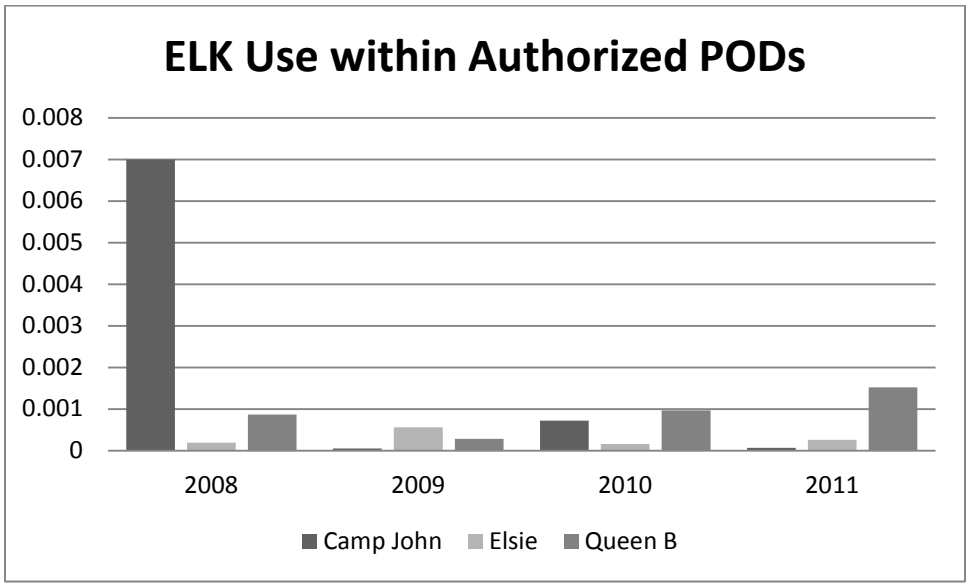


one elk was located within the Elsie POD area. The highest number of locations for another elk within the project areas was elk 335673 that was located within the Camp John SMA Year 1 POD area 15 times during September and October of 2008.

There was not consistent use of any project areas during biological year 2009. The most use of a POD area was 20 locations for elk 356905 within the Elsie project area evenly split between June and August. The next highest project area use by a single elk, 335328, was eight locations; she used the Queen B POD area in June 2009. In total five elk used the three project areas. The other three elk were each located once within one of the project areas. In total there were 35 data locations within the three POD areas.

Consistent use of the project areas was not evident in biological year 2010. The highest use of a project area was 20 locations for elk 326171 within the Camp John SMA Year 1 area during September and October 2010. Elk 335328 was recorded within the Queen B POD area 17 times from August through November 2010. The next highest use was seven locations for elk 356905 within the Queen B POD area in September and October. Seven collared elk used the three project areas in biological year 2010, with a total of 59 locations.

Six collared elk were recorded a total of 57 times within the three project areas in biological year 2011. Elk 335328 used the project areas most, again being located within the Queen B POD area 17 times from August through November 2011. Elk 907437 was located seven times within the Queen B POD area in July 2011. Elk 907588 was located within the Elsie POD area six times, twice each in May and September 2011 and twice in March 2012.



Reclamation: With no drilling or construction activity having taken place to date, there has not been any reclamation activity to monitor.

2013 ACTIVITY PLANS

Lance supplied BLM with written documentation of their planned 2013 activities which includes the drilling of 10 unit obligation wells from the Camp John SMA Phase 1 Year 1 POD. Lance does not intend to drill any of the Year 2 POD wells in 2013.

Yates has not provided a written activity plan but has verbally stated on multiple occasions, including at the RMPA monitoring team annual meeting November 7, 2012, that they have no plans to implement the Queen B or Elsie projects in 2013.

DISCUSSION

Demographic parameters are 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. The range fidelity, security habitat, and habitat use standards provide for more immediate feedback.

Demographic trends appear to be stable (calf production and winter calf survival) to increasing slightly (population and next-summer calf survival). Range fidelity appears to be mixed, calving range fidelity appears to be increasing, whereas crucial winter range fidelity is decreasing, and yearlong range fidelity is steady. Decreasing winter range fidelity may be related to the trend of warmer winters with decreased snowpack. Snowpack is often a primary factor in determining crucial winter range, however within the Powder River Basin snowpack typically does not limit elk movement. At this time, seasonal range fidelity is also being evaluated on a limited data set, four years for crucial winter range and yearlong range and five seasons for calving range. Whereas, the demographic standards are based on nine years.

The difficulty in differentiating elk during the spring survey, to estimate winter calf survival, complicates the compatibility of that data to the traditional reporting. Winter calf survival data from the spring and post-season surveys should be reported in the same fashion. One option may be to count calves versus all other elk instead of classifying the yearlings and adults. If we did this through the years it would show trends of calves.

Range fidelity in the decision record examined the FCPA seasonal range use within the entire herd unit whereas an independent analysis reported the FCPA seasonal range use compared to the FCPA. Both of these approaches provide valuable information. Basing fidelity on the herd unit evaluates the contribution of the FCPA seasonal ranges to the entire herd helping to ensure the contribution of the FCPA to the herd is maintained. Whereas basing fidelity on the FCPA focuses the evaluation on the area to which the RMPA management actions pertain and therefore eliminates some of the variables not applicable to the RMPA. Calving range and crucial winter range fidelity evaluated throughout the herd unit, 71% and 40%, was lower than fidelity evaluated within the FCPA, 88% and 52%. Seasonal range fidelity at the herd unit scale should be lower than at the FCPA scale as long as elk are effectively using the seasonal ranges outside the FCPA. Yearlong range fidelity was slightly higher across the herd unit (78%) than within the FCPA (71%); this result reinforces the greater reliance on the FCPA than the southern elk range. If there was greater elk use outside the FCPA, larger denominator, the fidelity to the FCPA yearlong range would decrease.

In examining the habitat effectiveness within the POD areas there is an issue with one or two animals constituting the bulk of locations for some areas. In future reports WEST should be able to statistically weight these situations and provide a more realistic view of use.

Verbal and written work statements expressing no or limited operation plans are not legally binding. Therefore, drilling permits authorized by the BLM or WOGCC are considered reasonably foreseeable and are accounted for when evaluating security habitat loss and the other performance standards.

RECOMMENDATIONS

Presently the authorized activity has not adversely affected the performance standards with the exception of security habitat. At this time there are no demographic or elk use (seasonal range fidelity and habitat effectiveness) trends suggesting that a change in FCPA management is necessary.

Seasonal range fidelity should continue to be evaluated at both the herd unit and the FCPA scales as both scales provide valuable insight into how the elk use their seasonal ranges.

Report winter calf survival results in a fashion where the traditional fall survey results and the newly incorporated spring surveys are directly comparable, such as calves per 100 adults.

In examining the habitat effectiveness within the POD areas, use should be statistically evaluated for individual elk.