

LEGEND

- Proposed pipeline centerline
- MTV-1 MT DEQ pipeline alternative route
- CAR-013 Access Road
- PS-09 Pump Station
- MLV-01 Valve Site
- 45 Milepost
- Approximate lek location
- 3-mile buffer
- 1-mile buffer
- Viewshed from lek
- Suitable nesting habitat*
 North of Milk River: Average shrub cover ≥15%, silver sagebrush is approximately half of the shrub cover (Tack 2006).
 South of Milk River: Average shrub cover ≥15-31% of which the majority is sagebrush (Montana Sage Grouse Work Group 2005).
 *All nesting habitat based on field mapping within 150' of centerline.
 NOTE: Implement Mitigation I at all areas with suitable nesting habitat.

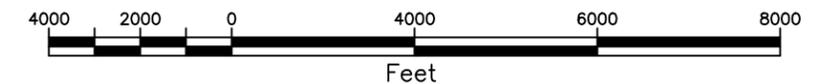
Proposed Construction Constraints and Mitigation

- Constraint I. No construction from March 1 through June 15.
- Constraint II. No construction from ½ hour before sunrise to 2 hours after sunrise from March 1 through June 15.
- Mitigation I. Mow suitable nesting habitat between September 1 and November 30 in the year prior to construction. Implement sage-grouse nesting habitat Construction/Reclamation Unit.
- Mitigation II. Monitor lek when pipeline construction is within 3 miles. If displaying males that were present prior to construction are not present for three consecutive mornings after construction has commenced, confer with designated personnel.

Notes:

1. Sage-grouse or sage-grouse sign were located in 2009 at lek site 1725.
2. Eight male sage-grouse were observed in 2009 at lek 1428.
3. RECOMMEND CONSTRAINT II RATHER THAN CONSTRAINT I AT MP 238.9 SINCE VISIBLE AREA IS VERY RESTRICTED.

Centerline and facilities: 03/26/10.
 Aerial photography: NAIP 2009.
 Viewshed and 10 meter topography generated from USGS 1 arc-second NED.

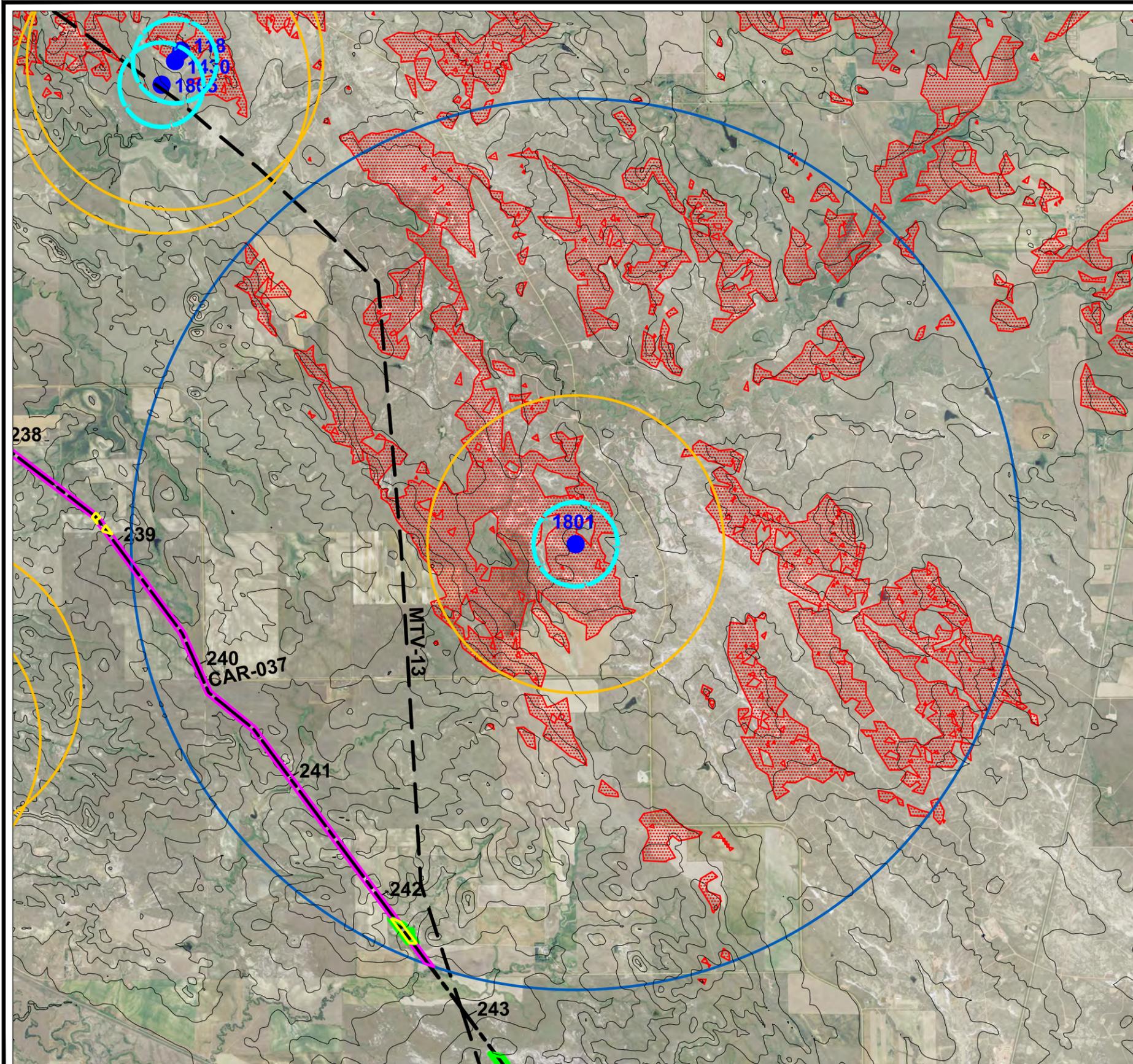


Greater sage-grouse leks 1428 & 1725 : Viewshed from leks and suitable nesting habitat along Keystone XL project



SCALE: 1"=4000'
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FIGURE
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LEGEND

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South of Milk River: Average shrub cover ≥15-31% of which the majority is sagebrush (Montana Sage Grouse Work Group 2005).
*All nesting habitat based on field mapping within 150' of centerline.
NOTE: Implement Mitigation I at all areas with suitable nesting habitat.

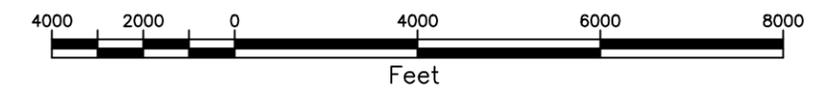
Proposed Construction Constraints and Mitigation

- Constraint I. No construction from March 1 through June 15.
- Constraint II. No construction from ½ hour before sunrise to 2 hours after sunrise from March 1 through June 15.
- Mitigation I. Mow suitable nesting habitat between September 1 and November 30 in the year prior to construction. Implement sage-grouse nesting habitat Construction/Reclamation Unit.
- Mitigation II. Monitor lek when pipeline construction is within 3 miles. If displaying males that were present prior to construction are not present for three consecutive mornings after construction has commenced, confer with designated personnel.

Notes:

1. Sage-grouse or sage-grouse sign were located at lek site in 2009.
2. RECOMMEND CONSTRAINT II RATHER THAN CONSTRAINT I AT MP 242.2 SINCE SUITABLE HABITAT IS ON THE MARGIN OF THE 3-MILE BUFFER AND VERY LIMITED.

Centerline and facilities: 03/26/10.
Aerial photography: NAIP 2009.
Viewshed and 10 meter topography generated from USGS 1 arc-second NED.

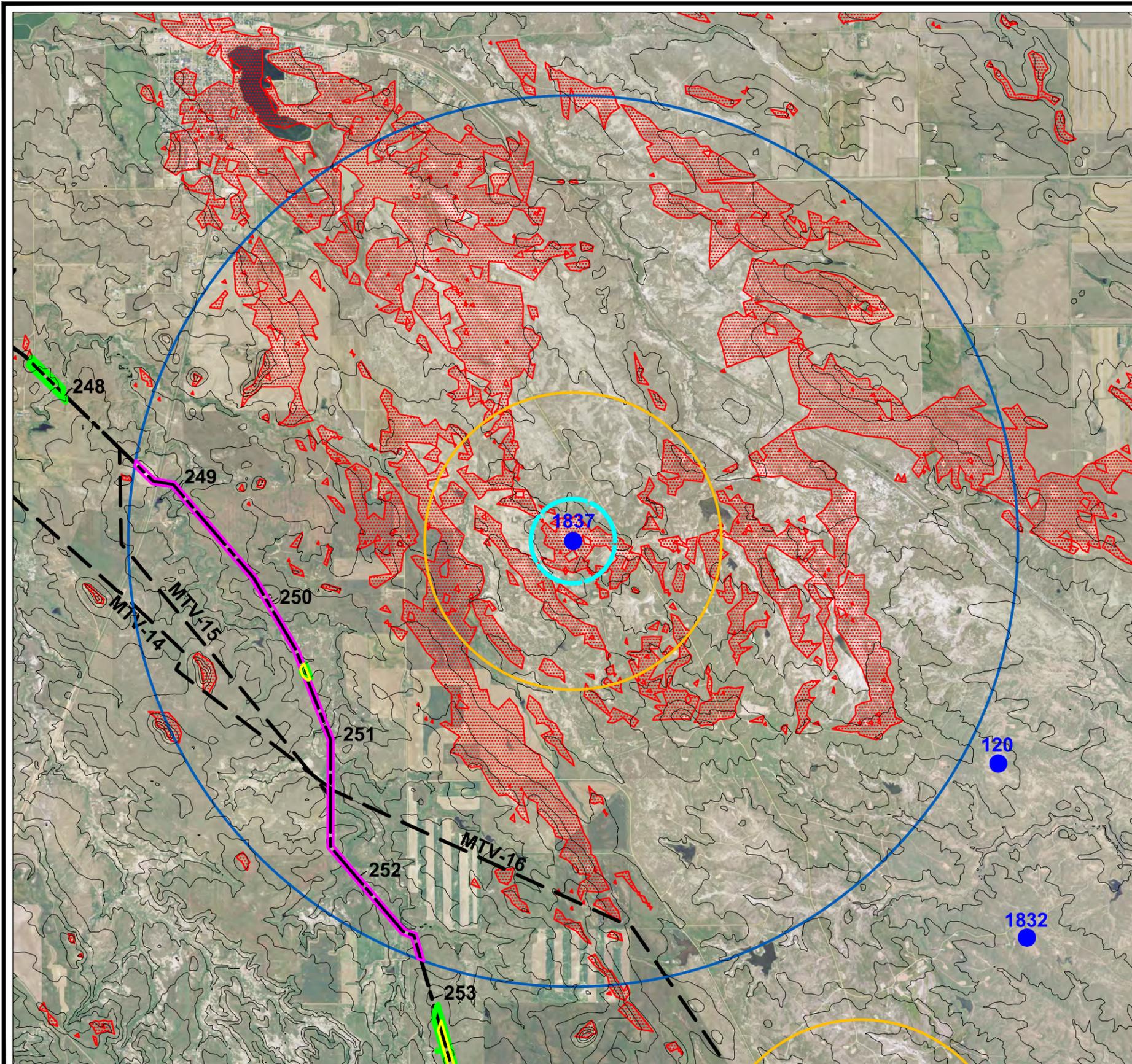


Greater sage-grouse lek 1801 : Viewshed from lek and suitable nesting habitat along Keystone XL project

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Environmental Services, Inc.
P.O. Box 6045
Helena, Montana 59604

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FIGURE
17
SHEET: 1 of 1



LEGEND

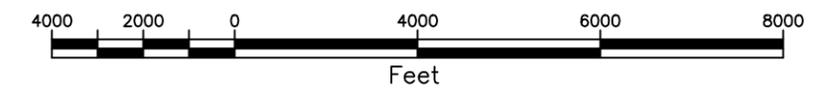
- Proposed pipeline centerline
- MTV-1 MT DEQ pipeline alternative route
- Access Road
- PS-09 Pump Station
- Valve Site
- Milepost
- Approximate lek location
- 3-mile buffer
- 1-mile buffer
- Viewshed from lek
- Suitable nesting habitat*
 North of Milk River: Average shrub cover ≥15%, silver sagebrush is approximately half of the shrub cover (Tack 2006).
 South of Milk River: Average shrub cover ≥15-31% of which the majority is sagebrush (Montana Sage Grouse Work Group 2005).
 *All nesting habitat based on field mapping within 150' of centerline.
 NOTE: Implement Mitigation I at all areas with suitable nesting habitat.

Proposed Construction Constraints and Mitigation

- Constraint I. No construction from March 1 through June 15.
- Constraint II. No construction from ½ hour before sunrise to 2 hours after sunrise from March 1 through June 15.
- Mitigation I. Mow suitable nesting habitat between September 1 and November 30 in the year prior to construction. Implement sage-grouse nesting habitat Construction/Reclamation Unit.
- Mitigation II. Monitor lek when pipeline construction is within 3 miles. If displaying males that were present prior to construction are not present for three consecutive mornings after construction has commenced, confer with designated personnel.

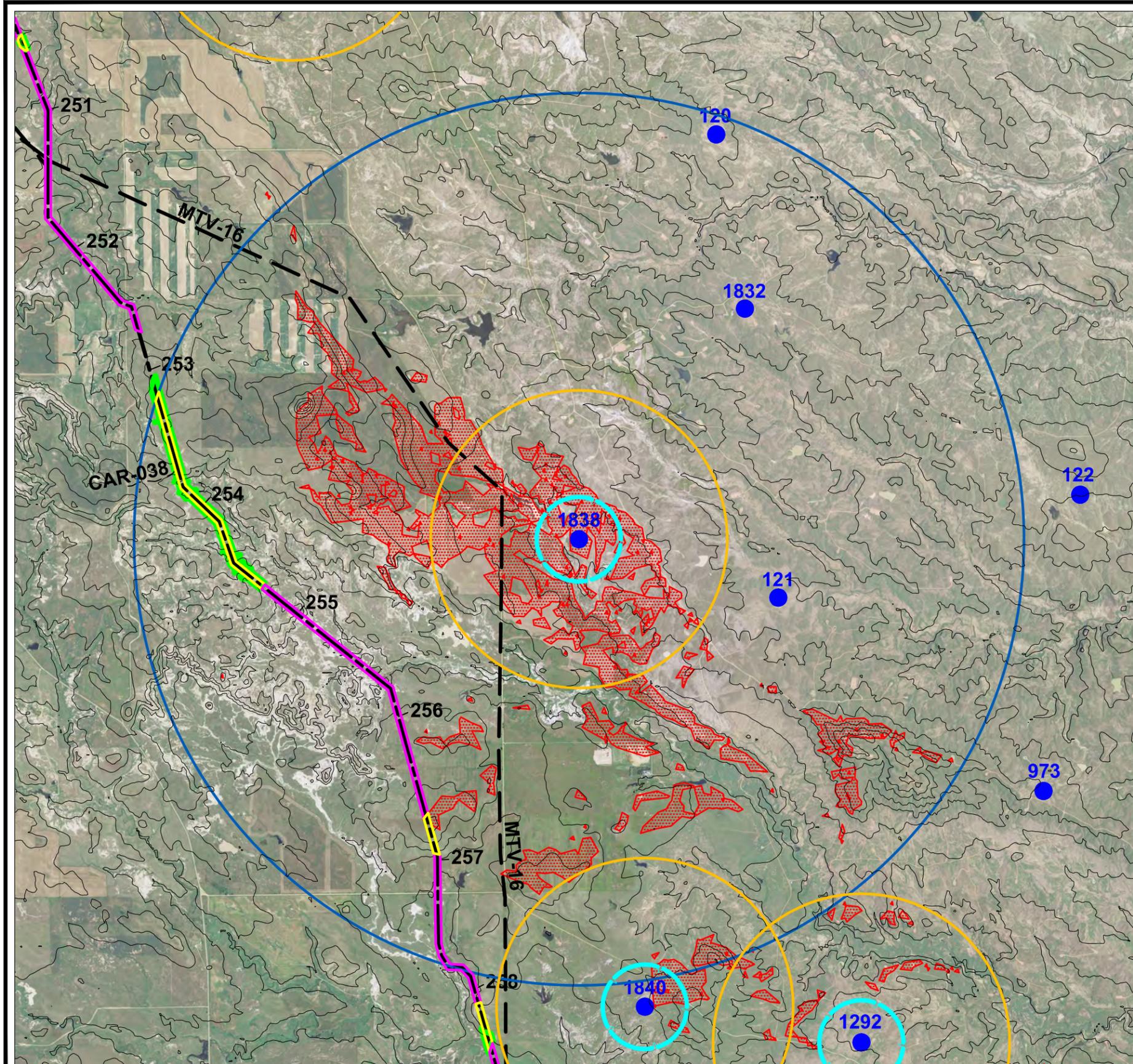
- Notes:
1. Six male sage-grouse observed in 2009.
 2. RECOMMEND CONSTRAINT II RATHER THAN CONSTRAINT I AT MP 250.5 SINCE SUITABLE HABITAT IS VERY LIMITED.

Centerline and facilities: 03/26/10.
 Aerial photography: NAIP 2009.
 Viewshed and 10 meter topography generated from USGS 1 arc-second NED.



Greater sage-grouse lek 1837 : Viewshed from lek and suitable nesting habitat along Keystone XL project

WESTECH Environmental Services, Inc. P.O. Box 6045 Helena, Montana 59604	SCALE: 1"=4000'	FIGURE
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FILE: KXL1006.DWG		SHEET: 1 of 1



LEGEND

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 North of Milk River: Average shrub cover ≥15%, silver sagebrush is approximately half of the shrub cover (Tack 2006).
 South of Milk River: Average shrub cover ≥15-31% of which the majority is sagebrush (Montana Sage Grouse Work Group 2005).
 *All nesting habitat based on field mapping within 150' of centerline.
 NOTE: Implement Mitigation I at all areas with suitable nesting habitat.

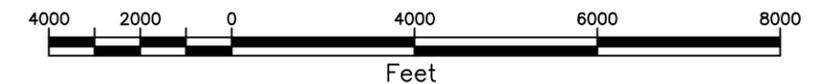
Proposed Construction Constraints and Mitigation

- Constraint I. No construction from March 1 through June 15.
- Constraint II. No construction from ½ hour before sunrise to 2 hours after sunrise from March 1 through June 15.
- Mitigation I. Mow suitable nesting habitat between September 1 and November 30 in the year prior to construction. Implement sage-grouse nesting habitat Construction/Reclamation Unit.
- Mitigation II. Monitor lek when pipeline construction is within 3 miles. If displaying males that were present prior to construction are not present for three consecutive mornings after construction has commenced, confer with designated personnel.

Notes:

1. Six male sage-grouse observed at lek site 1838 in 2009.
2. Keystone observed one male sage-grouse at point 121 in April 2010.

Centerline and facilities: 03/26/10.
 Aerial photography: NAIP 2009.
 Viewshed and 10 meter topography generated from USGS 1 arc-second NED.



Greater sage-grouse lek 1838 : Viewshed from lek and suitable nesting habitat along Keystone XL project



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FIGURE
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