

Late-Filed Exhibit 8

Memorandum Regarding the Avoidance Areas Analysis Completed for the BOE II Pipeline Project BOE Pipeline, LLC PU-16-094

BOE Pipeline, LLC, through its contractors, completed surveys for the BOE II Pipeline Project (“Project”) as set forth in detail in the Consolidated Application for a Certificate of Corridor Compatibility and Route Permit, and as discussed at the public hearing. This document provides a summary of the survey methodology completed along the Project route and datasets utilized to complete the PSC analysis of avoidance areas, along with the results of such review.

The accompanying maps depict the locations of the avoidance areas, with the exception of cultural resources. The location of all cultural resources are not publicly available and have not been specifically identified to date, but through further review of the Project, all cultural resource areas of concern will be reviewed and avoided to the extent discussed below.

Avoidance Areas

Pursuant to North Dakota Administrative Code Section 69-06-08-02(2), an Avoidance Area is a geographic area that may not be considered in the routing of a transmission facility unless the application shows that, under the circumstances, there is no reasonable alternative. In determining whether an Avoidance Area should be designated for a transmission facility, the Commission may consider, among other things, the proposed management of adverse impacts, the orderly siting of facilities, system reliability and integrity, the efficient use of resources, and alternative routes. A transmission facility route may not be sited within an Avoidance Area unless the applicant demonstrates that under the circumstances there is no reasonable alternative. Economic considerations alone are not sufficient to establish no reasonable alternative. A buffer zone of a reasonable width to protect the integrity of the area will be included unless a distance is specified in the criteria.

For the Project, BOE proposed the route to circumvent Avoidance Areas where possible. However, certain Avoidance Areas will be impacted as part of the Project. Impacts are not anticipated to exceed approximately 11% of the total Project 200-foot-wide corridor as allowed under N.D.A.C. § 69-06-08-02.

For each Avoidance Area where the route traverses the area, there is no reasonable alternative to the proposed route and should be sited where proposed. Each avoidance area is discussed below, along with alternative routes considered and appropriate mitigation measures and buffer zones.

N.D.A.C. § 69-06-08-02(2)	Transmission Facility Corridor and Route Criteria	
	Avoidance Areas	Results
(a)	<p>Designated or registered national: historic districts; wildlife areas; wild, scenic or recreational rivers; wildlife refuges; and grasslands</p>	<p>The route will cross the Little Missouri National Grassland, which has been designated as a national grassland. Alternative routes were considered, but are not sufficient. Areas to the west of the Route would provide significant topographical challenges and are designated as United States Forest Service wilderness areas (non-motorized areas). Areas to the east are owned by the Three Affiliated Tribes. BOE was unable to negotiate a right-of-way agreement to cross lands owned by the Three Affiliated Tribes. Based on the challenges located on both the east side and west side of the route, there is no reasonable alternative to the proposed route crossing this Avoidance Area.</p> <p>The BLM is the ultimate authority for granting this project ROW across BLM and USFS lands; however, the USFS is a cooperating agency on the project and has been involved in pertinent discussions. A meeting was held between the BLM, USFS and BOE on February 12, 2015, at which point it was determined that BOE could pursue a route that crosses USFS lands.</p> <p>Upon completion of construction activities, the topography of the Project route would be returned to its preconstruction contours and vegetation cover would be replaced. No long term impacts are anticipated.</p>
(b)	<p>Designated or registered state: wild, scenic, recreational rivers, game refuges, game management areas, forest management lands, grasslands</p>	<p>The Project route intersects the Little Missouri River, a designated state Scenic River. Route alternatives were considered. However, crossing the Little Missouri River could not be avoided, as it spans several miles in an east-west direction. Accordingly, there are no reasonable alternatives to crossing the Little Missouri River.</p> <p>Where the Project crosses the Little Missouri River, the Project will utilize HDD techniques, with the Project being installed a minimum of 20 feet below the river channel. The Project will</p>

		also utilize thicker walled pipe in this area to minimize the risk of spills and/or leaks.
(c)	Historical resources which are not specifically designated as exclusion or avoidance areas	<p>Historical resources which are not specifically designated as exclusion or avoidance areas are present within the Survey Area and Study Area. The original proposed route crossed through areas containing eligible cultural resources, but was relocated to the current proposed Route to avoid impacting known eligible cultural resources.</p> <p>Newly identified archeological sites were identified within the Study Area, Survey Area and will be crossed by the Route. However, the Project will not impact any previously identified recommended eligible cultural resources. A Memorandum of Agreement and testing plan will be developed in consultation with Federal, State, and Tribal entities to ensure that any impacts to newly identified recommended eligible cultural resources are mitigated in accordance with professional and industry standards. Under the Memorandum of Agreement, buffer zones will be implemented around these areas to protect their integrity. Cultural monitors will also be present during earth moving activities. Avoidable cultural resources will be buffered by 50 feet on state and private lands and by 100 feet on federal lands. There is no reasonable alternative to the proposed route crossing this Avoidance Area, and appropriate buffer zones will be implemented to protect the integrity of historical resources to allow for the route as proposed.</p>
(d)	Areas which are geologically unstable	The U.S. Geological Survey Landslide Susceptibility national dataset was utilized to determine landslide susceptibility of the Route. The Project Route will cross through five landslide areas. Additional routes were considered; however, not all landslide areas could be avoided due to topography constraints or constructability concerns, the practice of siting the pipeline adjacent to other utility corridors, at the request of the landowner/land management agency, or due to the large number of landslide areas in the region. Accordingly, there is no

		<p>reasonable alternative to the proposed route crossing this Avoidance Area.</p> <p>During construction, a combination of sand bag and foam trench breakers will be installed in geologically unstable areas to limit the saturation pressure within the trench, which will minimize the risk of potential landslides in the area.</p>
(e)	Within 500 feet of a residence, school, or place of business	While there are residences, schools, or places of business located within the 5-mile-wide study area, there are no residences, schools, or places of business within 500' of the route that required a waiver of this avoidance area.
2.f	Reservoirs and municipal water supplies	Publicly available datasets were utilized to implement avoidance of known reservoirs and municipal water supplies during the initial routing analysis. No reservoirs or municipal water supplies are located within the study area or crossed by the route.
2.g.	Water sources for organized rural water districts	BOE coordinated with rural water districts to obtain locational data on existing and planned rural water district transmissions lines and source locations. No known rural water district sources are located in the Study Area or the Survey Area and will not be crossed by the route.
2.h.	Irrigated land	Not applicable to underground transmission facilities.
2.i.	Areas of recreational significance which are not designated as exclusion areas	The Killdeer Mountain Four Bears Scenic Byway is located approximately 0.5 miles east of the Project at the nearest location. There are no areas of recreational significance not designated as exclusion areas located in the 200-foot-wide Survey Area, and none will be crossed by the Route.

*BOE II Pipeline
Avoidance Areas*

16
T150N R95W

15
T150N R95W

14
T150N R95W

21
T150N R95W

22
T150N R95W

23
T150N R95W

28
T150N R95W

27
T150N R95W

26
T150N R95W

33
T150N R95W

T150E

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BOE II Pipeline Project

- Project Line
- Survey Area
- Access Roads
- USFS Avoidance
- Historic Landslide Avoidance



*BOE II Pipeline
Avoidance Areas*

25
T150N R96W

30
T150N R95W

29
T150N R95W

36
T150N R96W

31
T150N R95W

32
T150N R95W

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T149N R96W

6
T149N R95W

5
T149N R95W



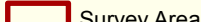
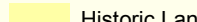
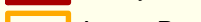
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T149N R95W

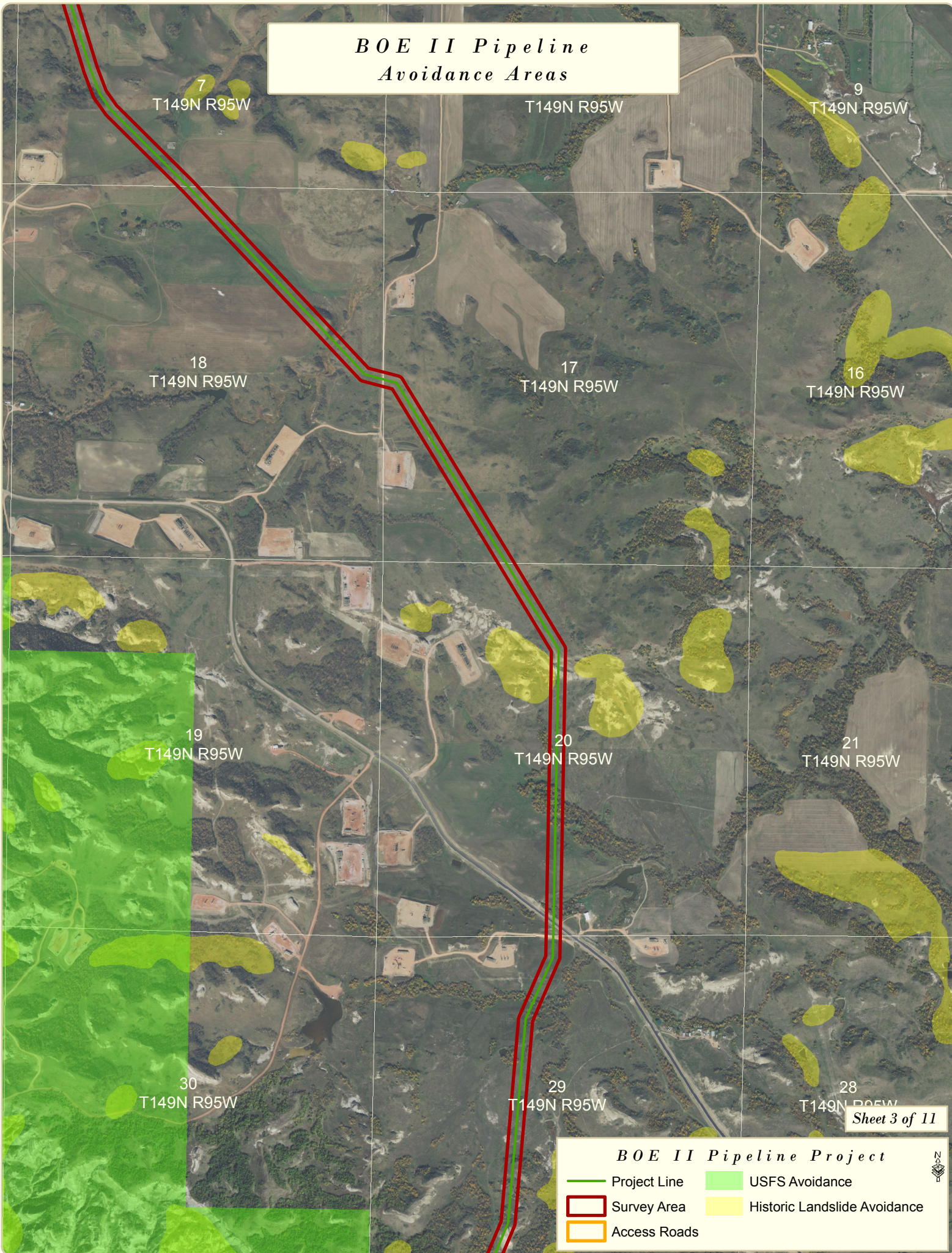
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BOE II Pipeline Project

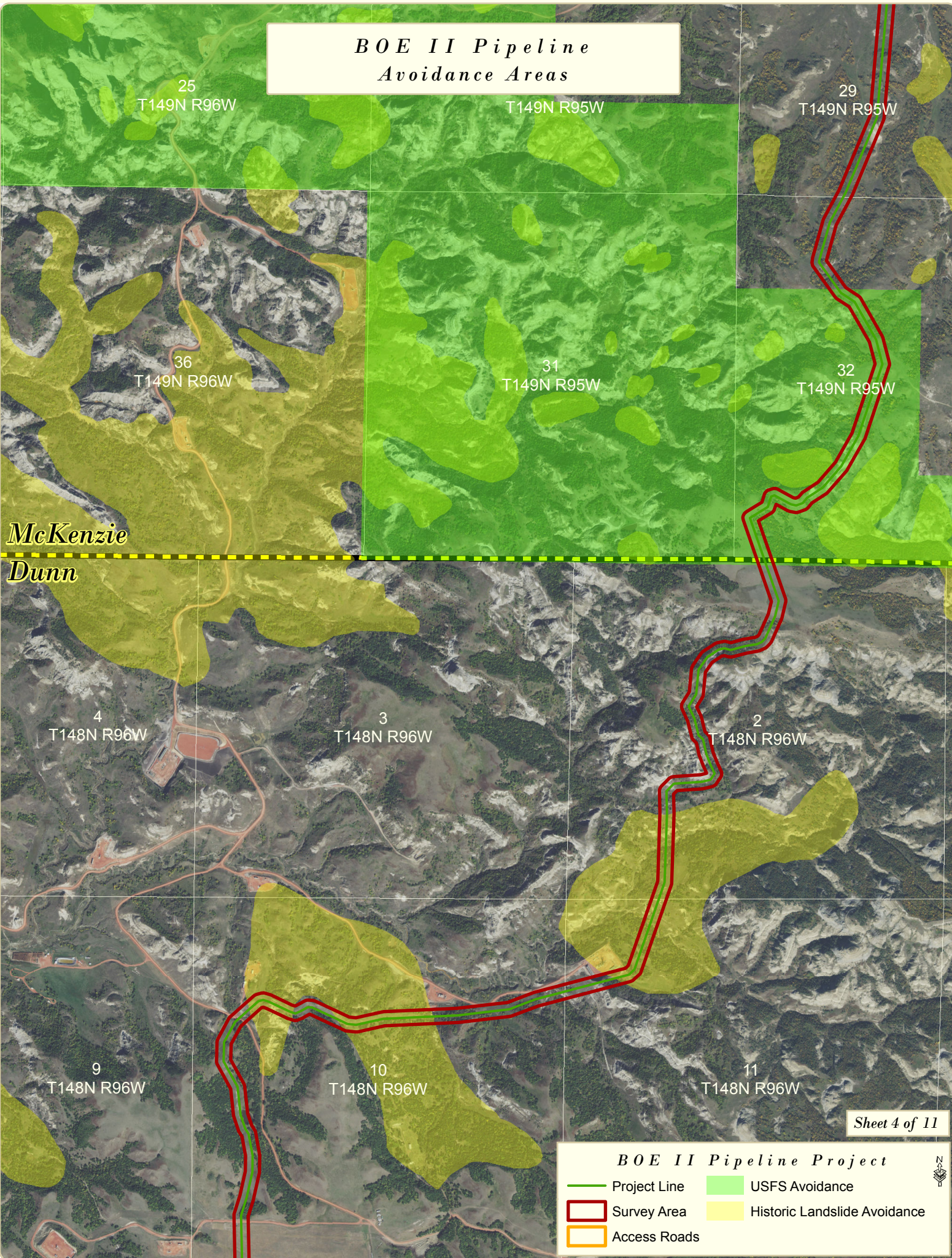
 Project Line	 USFS Avoidance
 Survey Area	 Historic Landslide Avoidance
 Access Roads	



BOE II Pipeline Avoidance Areas



BOE II Pipeline Avoidance Areas



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T149N R96W

T149N R95W

29
T149N R95W

36
T149N R96W

31
T149N R95W

32
T149N R95W

McKenzie
Dunn

4
T148N R96W

3
T148N R96W

2
T148N R96W

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T148N R96W

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T148N R96W

11
T148N R96W

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BOE II Pipeline Project

- Project Line
- Survey Area
- Access Roads
- USFS Avoidance
- Historic Landslide Avoidance



BOE II Pipeline Avoidance Areas

8
T148N R96W

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T148N R96W

17
T148N R96W

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T148N R96W

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T148N R96W

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T148N R96W

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T148N R96W

22
T148N R96W



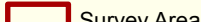


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T148N R96W

27
T148N R96W

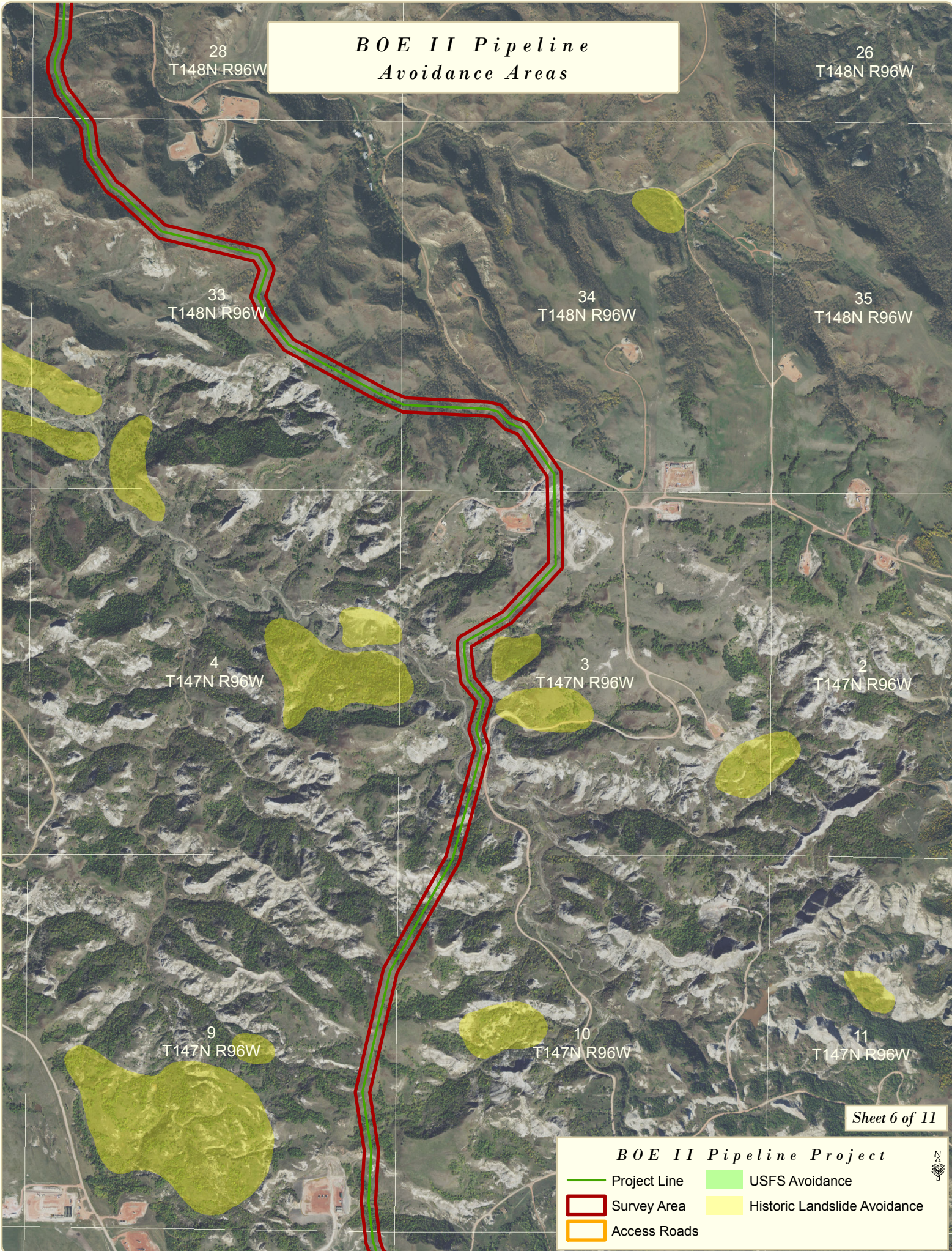
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BOE II Pipeline Project



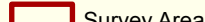

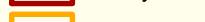
 Project Line	 USFS Avoidance
 Survey Area	 Historic Landslide Avoidance
 Access Roads	

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*BOE II Pipeline
Avoidance Areas*

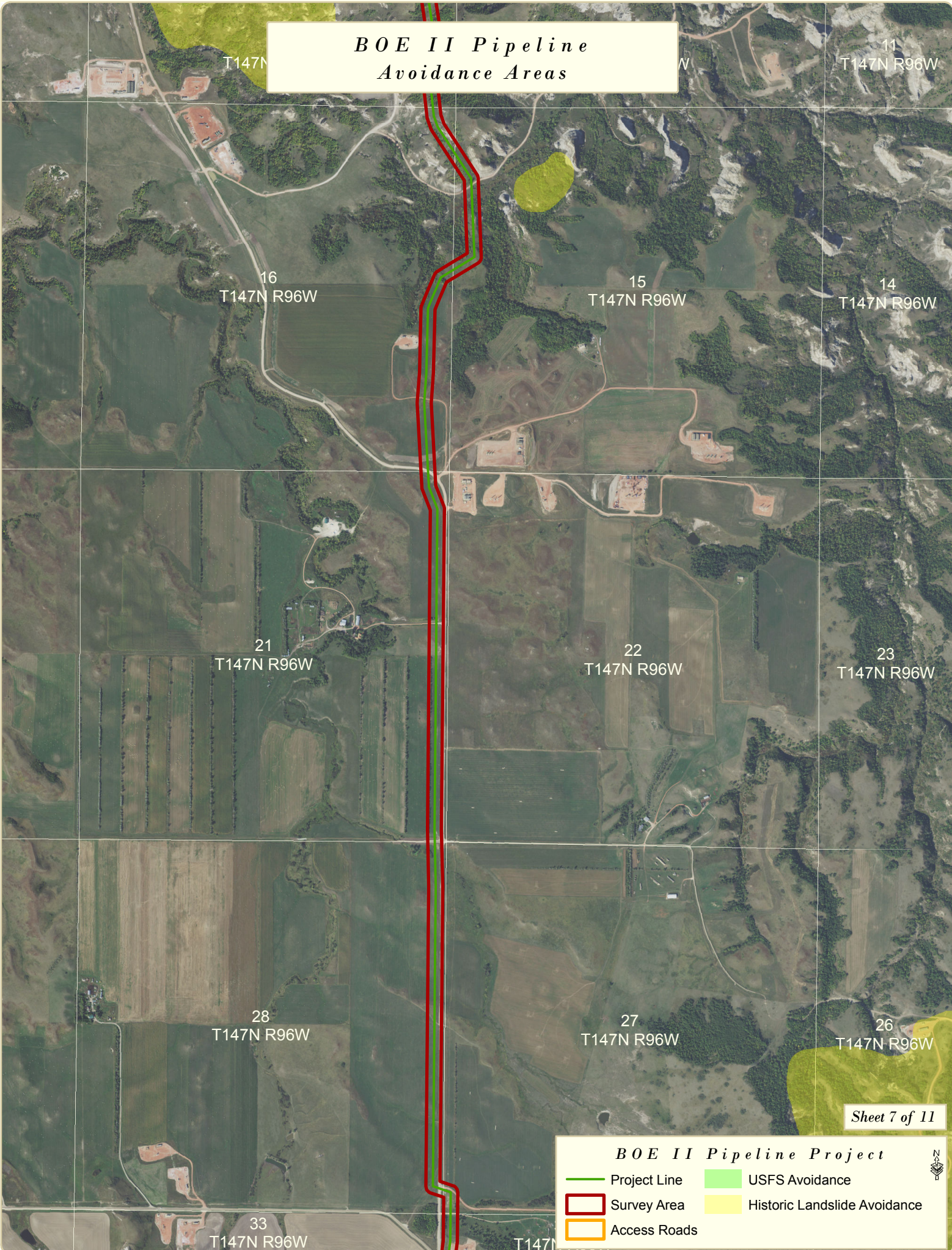


BOE II Pipeline Project

 Project Line	 USFS Avoidance
 Survey Area	 Historic Landslide Avoidance
 Access Roads	



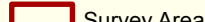

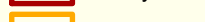
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*BOE II Pipeline
Avoidance Areas*



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BOE II Pipeline Project

 Project Line	 USFS Avoidance
 Survey Area	 Historic Landslide Avoidance
 Access Roads	

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27
T147N

26

25
T147N R96W

BOE II Pipeline Avoidance Areas

34
T147N R96W

35
T147N R96W

36
T147N R96W

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T146N R96W

2
T146N R96W

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T146N R96W

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T146N R96W

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T146N R96W


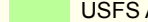
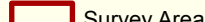
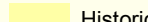

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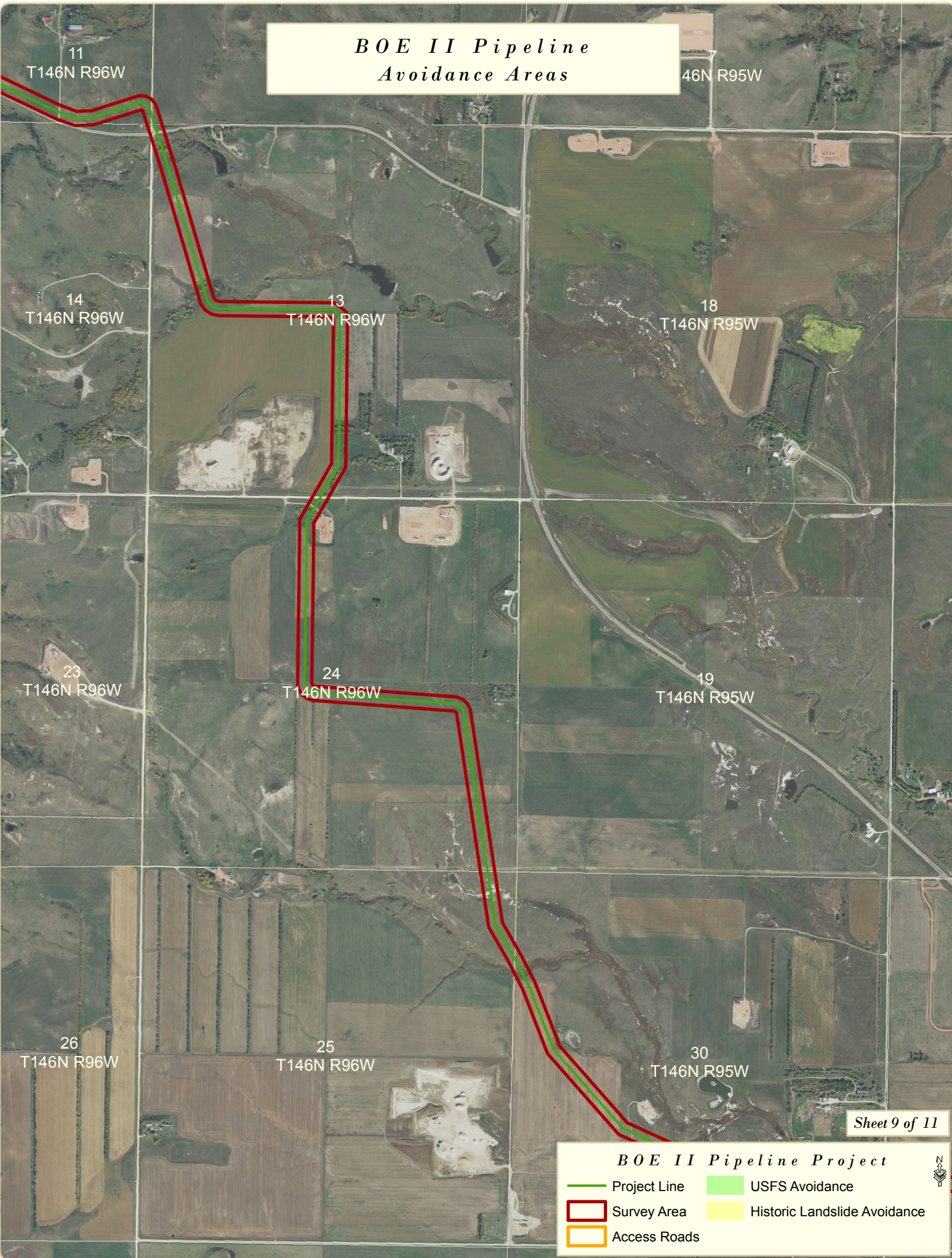
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BOE II Pipeline Project

 Project Line	 USFS Avoidance
 Survey Area	 Historic Landslide Avoidance
 Access Roads	



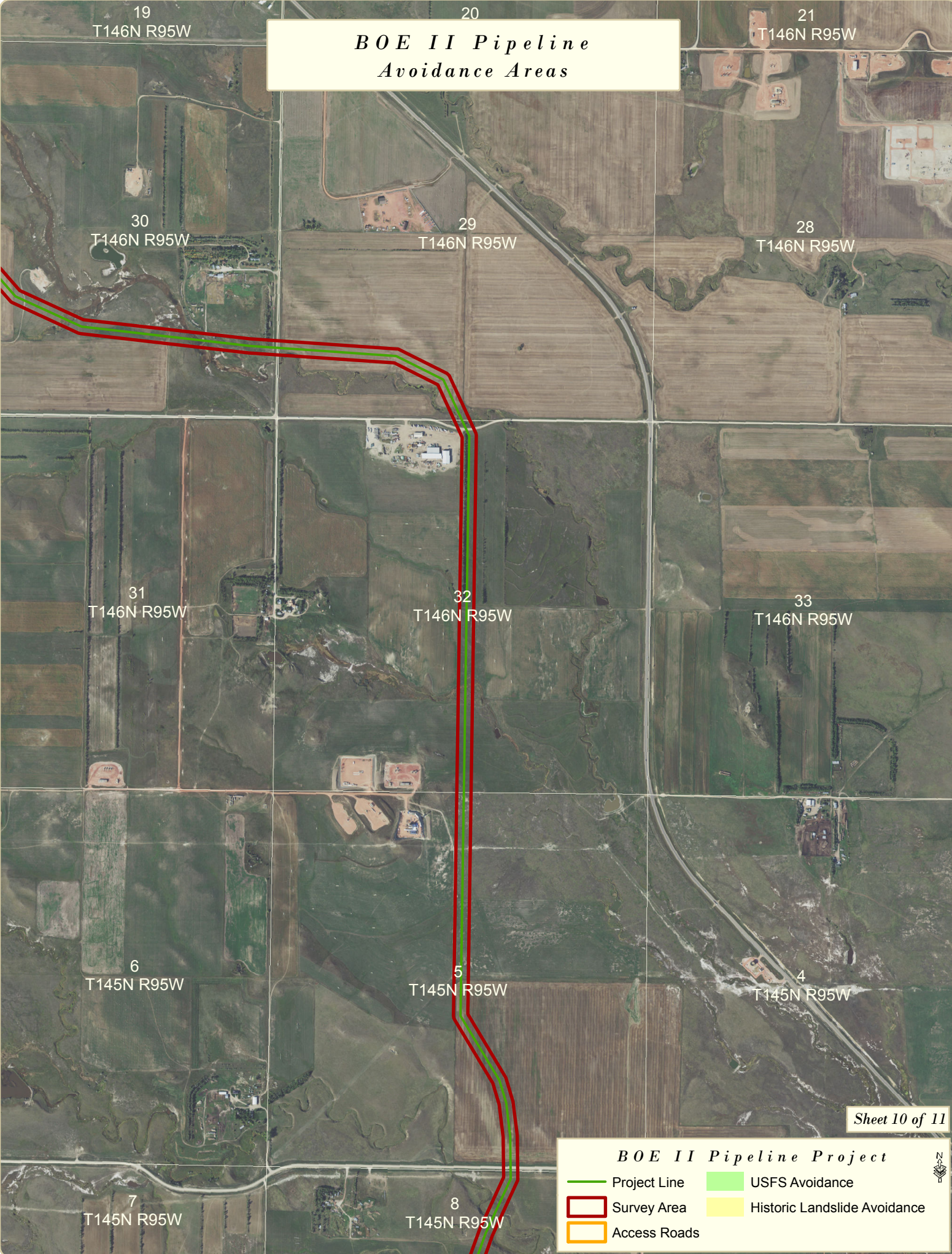
BOE II Pipeline Avoidance Areas




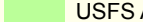
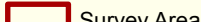
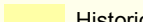
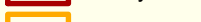
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*BOE II Pipeline
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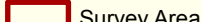


BOE II Pipeline Project

 Project Line	 USFS Avoidance
 Survey Area	 Historic Landslide Avoidance
 Access Roads	



**BOE II Pipeline
Avoidance Areas**

BOE II Pipeline Project

	Project Line		USFS Avoidance
	Survey Area		Historic Landslide Avoidance
	Access Roads		