

TAB 4 – Route Application Exhibits

Appendix 4.A	Archaeological and Cultural Assessment Report (Beaver Creek Archaeology)
Appendix 4.B	Maps of Exclusion and Avoidance Areas – See Map Book
Appendix 4.C	Landowner List
Appendix 4.D	State Sensitive Species & Rankings
Appendix 4.E	Agency Notifications and Responses
Appendix 4.F	Tree and Shrub Inventory

New Town Line Extension: A Comprehensive Report of Class III Intensive Cultural Resource Inventories from 2013 and 2014 in Mountrail County, North Dakota

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On Behalf of:
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Cultural Resource Use Permit: N/A
BCA Project No.: 2014-1118
January 2015

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Beaver Creek
ARCHAEOLOGY

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COUNTY	TWP	R	SEC	SU
Mountrail	156N	93W	32	GA
	155N	94W	13, 24, 25, 36	GA
	155N	93W	5-8, 17-19, 30, 31	GA
	154N	94W	1, 2, 11, 12	GA
	154N	93W	6-7, 18, 19, 30-33	GA
	153N	93W	3-6, 9-11, 13- 15, 24, 25	GA
	153N	92W	19-21, 26-28, 30, 35	GA
	152N	92W	3 4, 10, 15, 20-22	GA

Abstract

The purpose of this investigation was to survey for cultural resources within the 1,845-acre survey area of the proposed New Town Line Extension in Mountrail County, North Dakota. In 2013, 1,298 acres of the proposed project were inventoried as part of the Market Center Pipeline project (see MS #14475) and the remaining 547 acres were surveyed in 2014.

This project is proposed on private property (fee land) both outside and within the Fort Berthold Reservation. Due to the Public Service Commission (PSC) involvement in the project, the applicant must consult with ND SHPO.

Keitu Engineers & Consultants, Inc. on behalf of Hiland Crude, LLC contracted Beaver Creek Archaeology, Inc. (BCA) to conduct this study to fulfill the Section 106 obligations for this project. Between May 28, 2013 and September 9, 2013 and on June 10-12 and July 11, 2014, Lindsey Reiners (Field Director), Brittany Brooks (Crew Chief), Mark Goodyear (Archaeological Assistant), Eric McCann (Archaeological Assistant), Kevin Mieras (Archaeological Assistant), Erica Kramer (Archaeological Assistant), Tara Friend (Archaeological Assistant), and Andrew Domine (Archaeological Assistant) conducted the Class III Cultural Resource Inventory. Wade Burns was the Principal Investigator for this project.

During the inventory, BCA archaeologists identified 28 previously unrecorded cultural resources (32MN1077, 32MN1093, 32MN1094, 32MN1095, 32MN1096, 32MN1098, 32MN1099, 32MN1101, 32MN1103, 32MN1106, 32MN1107, 32MN1108, 32MN1109, 32MN1111, 32MN1113, 32MN1122, 32MN1123, 32MN1124, 32MN1125, 32MN1126, 32MN1127, 32MN1128, 32MN1129, 32MN1130, 32MN1131, 32MN1132, 32MN1300, and 32MN1301) and 23 previously recorded cultural resources (32MN72, 32MN562, 32MN818, 32MN830, 32MN900, 32MN1076, 32MN1078, 32MN1080, 32MN1081, 32MN1082, 32MN1083, 32MN1088, 32MN1249, 32MN1250, 32MNx122, 32MNx123, 32MNx130, 32MNx131, 32MNx174, 32MNx240, 32MNx241, 32MNx356, and 32MNx843). Cultural Resources include 34 Native American stone feature sites (32MN72, 32MN562, 32MN830, 32MN1076, 32MN1077, 32MN1080, 32MN1081, 32MN1082, 32MN1083, 32MN1088, 32MN1094, 32MN1095, 32MN1096, 32MN1098, 32MN1099, 32MN1101, 32MN1103, 32MN1106, 32MN1107, 32MN1108, 32MN1109, 32MN1113, 32MN1122, 32MN1123, 32MN1124, 32MN1125, 32MN1126, 32MN1128, 32MN1129, 32MN1130, 32MN1131, 32MN1132, 32MN1300, and 32MN1301), four Archaeological Historic sites (32MN818, 32MN900, 32MN1078, 32MN1127), four Architectural sites (32MN1093, 32MN1111, 32MN1249, and 32MN1250), eight cultural material scatter Site Leads (32MNx122, 32MNx123, 32MNx130, 32MNx131, 32MNx174, 32MNx240, 32MNx241, and 32MNx356), and one Isolated Find (32MNx843). Due to cultural resources within the proposed survey area, a plan of avoidance is proposed, and as long as this is followed, Beaver Creek Archaeology, Inc. recommends a finding of *No Adverse Effect* for this project.

Table of Contents

	<u>Page</u>
Abstract	i
Table of Contents	ii
List of Tables	iv
List of Figures	iv
Introduction	1
Project Background and Inventory Methodology	2
Environmental Setting	5
Native American Cultural Background	6
Paleo-Indian Period (9500-5500 B.C.).....	6
Plains Archaic Period (5500-400 B.C.).....	6
Plains Woodland Period (400 B.C.–A.D. 1200).....	6
Plains Village Period (A.D. 1200-1780).....	7
Equestrian/Fur Trade Period (A.D. 1780-1880).....	7
Reservation Era (A.D. 1880-present).....	8
Euro-American Cultural Background.....	9
Dakota Territory (1858-1889).....	9
North Dakota (1889-Present).....	10
Research Goals.....	12
Project Results.....	13
Survey Conditions.....	13
File Search.....	13
Intensive Pedestrian Survey.....	13
Summary and Recommendations.....	15
References Cited.....	21
Appendix A: Survey Area Photographs	
Appendix B: Maps	
Appendix C: Literature Search	
Appendix D: Site Descriptions	
32MN72	
32MN562 (Update)	
32MN818 (Update)	
32MN830	
32MN900	
32MN1076	
32MN1077	
32MN1078 (Update)	
32MN1080 (Update)	
32MN1081	

32MN1082
32MN1083
32MN1088
32MN1093
32MN1094
32MN1095
32MN1096
32MN1098
32MN1099
32MN1101
32MN1103
32MN1106
32MN1107
32MN1108
32MN1109
32MN1111
32MN1113
32MN1122
32MN1123
32MN1124
32MN1125
32MN1126
32MN1127
32MN1128
32MN1129
32MN1130
32MN1131
32MN1132
32MN1249
32MN1250
32MN1300
32MN1301
32MNx122
32MNx123
32MNx130
32MNx131
32MNx174
32MNx240
32MNx241
32MNx356
32MNx843

List of Tables

<u>Table</u>	<u>Page/Appendix</u>
1. Project Location:	1
2. Cultural Resources located within or near the survey area.....	14
3. Sites around the 61 ft disturbance area corridor.	16
4. Previously impacted sites.	17
5. Summary of Cultural Resources identified during the inventory located in or near the survey area.	17
6. Summary information on sites recorded within a one-mile radius of the survey area.	C
7. Summary information on site leads/isolated finds recorded within a one-mile radius of the survey area.....	C
8. Manuscripts on file at the SHSND from the sections in which the survey area are located.	C
9. Mountrail County Deed Search 154-93-31 NE ¼ SE ¼	D
10. Mountrail County Deed Search 154-93-31 SE ¼ SE ¼	D
11. Mountrail County Deed Search 155-93-5 NE ¼ NE ¼.....	D
12. Mountrail County Deed Search 155-93-5 NE ¼ NE ¼.....	D
13. Mountrail County Deed Search 152-92-3 NE ¼ NW ¼.....	D

List of Figures

<u>Figure</u>	<u>Appendix</u>
1. Project location.....	4
2. Overview of the survey area. View to the north.....	A
3. Overview of the survey area. View to the northeast.....	A
4. Overview of the survey area. View to the northwest.	A
5. Overview of the survey area. View to the south.....	A
6. Map 1 of 2 showing project location.....	B
7. Map 2 of 2 showing project location.....	B
8. Site 32MN72 Avoidance Map.....	D
9. Pipeline scar through site 32MN562.	D
10. Site 32MN562 Location Map.....	D
11. Site 32MN818 looking to the west-southwest.....	D
12. Site 32MN818 Location & Avoidance Map.....	D
13. Site 32MN830 Avoidance Map.....	D
14. Site 32MN900 Location Map.....	D
15. Site 32MN1076 Avoidance Map.....	D
16. Site 32MN1077 Avoidance Map.....	D
17. Site 32MN1078 Location Map.....	D
18. Site 32MN1080 Avoidance Map.....	D
19. Site 32MN1081 Avoidance Map.....	D
20. Site 32MN1082 Avoidance Map.....	D

New Town Line Extension: A Comprehensive Report of Class III Intensive Cultural Resource Inventories from 2013 and 2014 in Mountrail County, North Dakota

21. Site 32MN1083 Avoidance Map.....	D
22. Site 32MN1088.	D
23. Site 32MN1088 Avoidance Map.....	D
24. Site 32MN1093 overview. View to the northeast.	D
25. Site 32MN1093 Location Map.....	D
26. Feature 1 of site 32MN1094. View to the south.....	D
27. Site 32MN1094 Avoidance Map.....	D
28. Site 32MN1095, Feature 1, looking to the south.....	D
29. Site 32MN1095 Avoidance Map.....	D
30. Site 32MN1096 overview. View to the south.	D
31. Site 32MN1096 Avoidance Map.....	D
32. Site 32MN1098 overview to the south.	D
33. Site 32MN1098 Avoidance Map.....	D
34. Features 1 & 2 of site 32MN1099. View to the south.....	D
35. Site 32MN1099 Avoidance Map.....	D
36. Site 32MN1101, Feature 1, looking to the east.	D
37. Site 32MN1101 Avoidance Map.....	D
38. Site 32MN1103 overview to the north.	D
39. Site 32MN1103 Avoidance Map.....	D
40. Feature 1 of site 32MN1106. View to the south.....	D
41. Site 32MN1106 Avoidance Map.....	D
42. Site 32MN1107, Feature 1, looking to the west.....	D
43. Site 32MN1107 Avoidance Map.....	D
44. Feature 1 of site 32MN1108. View to the south.....	D
45. Site 32MN1108 Avoidance Map.....	D
46. Site 32MN1109 overview to the east.	D
47. Site 32MN1109 Avoidance Map.....	D
48. Site 32MN1111 overview. View to the southwest.	D
49. Site 32MN1111 Location Map.....	D
50. Feature 1 of site 32MN1113.....	D
51. Site 32MN1113 Avoidance Map.....	D
52. Site 32MN1122 overview. View to the south.	D
53. Site 32MN1122 Avoidance Map.....	D
54. Feature 2 of site 32MN1123.....	D
55. Site 32MN1123 Avoidance Map.....	D
56. Feature 1 of site 32MN1124. View to the east.	D
57. Site 32MN1124 Avoidance Map.....	D
58. Site 32MN1125 overview. View to the northwest.	D
59. Site 32MN1125 Avoidance Map.....	D
60. Feature 1 of site 32MN1126. View to the West.	D
61. Site 32MN1126 Avoidance Map.....	D
62. Site 32MN1127 overview. View to the east.....	D

New Town Line Extension: A Comprehensive Report of Class III Intensive Cultural Resource Inventories from 2013 and 2014 in Mountrail County, North Dakota

63. Site 32MN1127 Location Map.....	D
64. Site 32MN1128 overview to the south.....	D
65. Site 32MN1128 Avoidance Map.....	D
66. Feature 1 of site 32MN1129.....	D
67. Site 32MN1129 Avoidance Map.....	D
68. Feature 1 of site 32MN1130. View to the east.....	D
69. Site 32MN1130 Avoidance Map.....	D
70. Feature 1 of site 32MN1131.....	D
71. Site 32MN1131 Avoidance Map.....	D
72. Feature 1 of site 32MN1132. View to the north.....	D
73. Site 32MN1132 Avoidance Map.....	D
74. Site 32MN1249.....	D
75. Site 32MN1249 Location Map.....	D
76. Site 32MN1250.....	D
77. Site 32MN1250 Location Map.....	D
78. Site 32MN1300, Feature 1, looking to the north.....	D
79. Site 32MN1300 Avoidance Map.....	D
80. Site 32MN1301, Feature 1.....	D
81. Site 32MN1301 Avoidance Map.....	D

Introduction

Keitu Engineers & Consultants, Inc. on behalf of Hiland Crude, LLC contracted Beaver Creek Archaeology, Inc. (BCA) to perform a Class III Cultural Resource Inventory of the New Town Line Extension in Mountrail County, North Dakota both outside and within the Fort Berthold Indian Reservation. The survey area cover 1,845 acres (see map in Appendix B). In 2013, 1,298 acres of the proposed project were inventoried as part of the Market Center Pipeline project (see MS #14475) and the remaining 547 acres were inventoried in 2014. The land status is private property outside the reservation and fee land within.

The legal locations for the survey area are presented below in a tabular format as depicted on the USGS 7.5' Belden SW, Manitou, New Town, Rat Lake, Rat Lake SE, and Rat Lake SW quadrangle maps:

Table 1. Project Location:

Township	Range	Sections	USGS Quad. Map
156N	93W	32	Manitou
155N	94W	13, 24, 25, 36	Rat Lake
155N	93W	5, 6, 7, 8, 17, 18, 19, 30, 31	Manitou & Rat Lake
154N	94W	1, 2, 11, 12	Rat Lake
154N	93W	6, 7, 18, 19, 30, 31, 32, 33	Rat Lake & Rat Lake SW
153N	93W	3, 4, 5, 6, 9, 10, 11, 13, 14, 15, 24, 25	Rat Lake SE & Rat Lake SW
153N	92W	19, 20, 21, 26, 27, 28, 30, 35	Belden SW & Rat Lake SE
152N	92W	3, 4, 10, 15, 20, 21, 22	Belden SW & New Town

File searches were conducted at the North Dakota State Historic Preservation Office (ND SHPO) by Raina Hanley, Mary Mortensen, Eric McCann, and Amanda Person of BCA on February 12, April 22-23, May 3 and 13, August 20, and September 12, 2013 and on February 10, May 5, and May 30, 2014. Between May 28, 2013 and September 9, 2013 and on June 10-12 and July 11, 2014, Lindsey Reiners (Field Director), Brittany Brooks (Crew Chief), Eric McCann (Archaeological Assistant), Kevin Mieras (Archaeological Assistant), Mark Goodyear (Archaeological Assistant), Tara Friend (Archaeological Assistant), Erica Kramer (Archaeological Assistant), and Andrew Domine (Archaeological Assistant) inventoried the project area. Wade Burns was Principal Investigator for this project. This report will detail the result of that inventory.

During the inventory, BCA archaeologists identified 28 previously unrecorded cultural resources (32MN1077, 32MN1093, 32MN1094, 32MN1095, 32MN1096, 32MN1098, 32MN1099, 32MN1101, 32MN1103, 32MN1106, 32MN1107, 32MN1108, 32MN1109, 32MN1111, 32MN1113, 32MN1122, 32MN1123, 32MN1124, 32MN1125, 32MN1126, 32MN1127, 32MN1128, 32MN1129, 32MN1130, 32MN1131, 32MN1132, 32MN1300, and 32MN1301) and 23 previously recorded cultural resources (32MN72, 32MN562, 32MN818, 32MN830, 32MN900, 32MN1076, 32MN1078, 32MN1080, 32MN1081, 32MN1082, 32MN1083, 32MN1088, 32MN1249, 32MN1250, 32MNx122, 32MNx123, 32MNx130, 32MNx131,

32MNx174, 32MNx240, 32MNx241, 32MNx356, and 32MNx843). Cultural Resources include 34 Native American stone feature sites, four Archaeological Historic sites, four Architectural sites, eight cultural material scatter Site Leads, and one Isolated Find.

The Native American stone feature sites (32MN72, 32MN830, 32MN1076, 32MN1077, 32MN1080, 32MN1081, 32MN1082, 32MN1083, 32MN1088, 32MN1094, 32MN1095, 32MN1096, 32MN1098, 32MN1099, 32MN1101, 32MN1103, 32MN1106, 32MN1107, 32MN1108, 32MN1109, 32MN1113, 32MN1122, 32MN1123, 32MN1124, 32MN1125, 32MN1126, 32MN1128, 32MN1129, 32MN1130, 32MN1131, 32MN1132, 32MN1300, and 32MN1301) have been recommended potentially *eligible* for the National Register of Historic Places (NRHP), and BCA recommends that the sites be avoided during pipeline construction. The sites will need to be avoided by a minimum of 50 ft (from the site boundary); however, the sites located on the Fort Berthold Indian Reservation (32MN1081, 32MN1082, and 32MN1083) will need to be avoided by a minimum of 75 ft (from the site features). For sites 32MN1080, 32MN1128, and 32MN1132 (located on the Fort Berthold Indian Reservation), BCA recommends that proposed construction activities stay within the existing pipeline disturbed within this segment, due to their close proximity. The existing disturbed area corridor is 61 ft in width. Temporary fencing along the site boundary in conjunction with site monitoring during construction would minimize any adverse effect to the site. No avoidance is necessary for site 32MN562, as the site has been destroyed by a previous pipeline project.

The four Archaeological Historic sites (32MN818, 32MN900, 32MN1078, 32MN1127) and four Architectural sites (32MN1093, 32MN1111, 32MN1249, and 32MN1250) are recommended *not eligible* for the NRHP. No avoidance is recommended for these sites during this project; however, avoidance via boring is recommended for site 32MN818, as it is an active railroad.

The previously recorded Isolated Find (32MNx843) was not relocated during the cultural resources inventory. Isolated Finds are recommended *not eligible* to the NRHP, and no avoidance is necessary. During the pedestrian survey, no evidence of the Site Leads (32MNx122, 32MNx123, 32MNx130, 32MNx131, 32MNx174, 32MNx240, 32MNx241, and 32MNx356) was observed within the project area.

Land use throughout the survey area consists of pastureland, fallow grasslands, and agricultural lands. Ground Surface Visibility (GSV) in these areas did not go below 30%, so no shovel probes were excavated.

Project Background and Inventory Methodology

The proposed project is the New Town Line Extension for Hiland Crude, LLC. A total of 1,845 acres, which encompasses the entire project area, was inventoried to Class III Standards for cultural resources between 2013 (see MS #14475) and 2014 (see map Appendix B). The New Town Line Extension is a 42.6-mile long, variable 250-1,414 ft wide (1,845-acre) pipeline corridor. In 2013, 1,298 acres of the proposed project were inventoried as part of the Market Center Pipeline project (see MS #14475) and the remaining 547 acres were inventoried in 2014.

BCA cultural resource staff conducted the Class III Cultural Resource Inventory of the proposed project area between May 28, 2013 and September 9, 2013 and on June 10-12 and July 11, 2014. The Secretary of the Interior (SOI) qualified archaeologist Wade Burns was the Principal Investigator for this project. The field crew consisted of Lindsey Reiners (Field Director), Brittany Brooks (Crew Chief), Mark Goodyear (Archaeological Assistant), Eric McCann (Archaeological Assistant), Kevin Mieras (Archaeological Assistant), Erica Kramer (Archaeological Assistant), Tara Friend (Archaeological Assistant), and Andrew Domine (Archaeological Assistant). Brittany Brooks prepared the site forms and the report. Jay Ell (GIS Coordinator) created the site form maps and project maps. The report and fieldwork preparation included a review of previously identified cultural resources and intensive pedestrian surveys of the survey area.

The pedestrian survey was performed by the BCA archaeologists walking linear pedestrian transects 10-15 meters apart for cultural resources. Shovel probes were implemented if the Ground Surface Visibility (GSV) dropped below 30%.

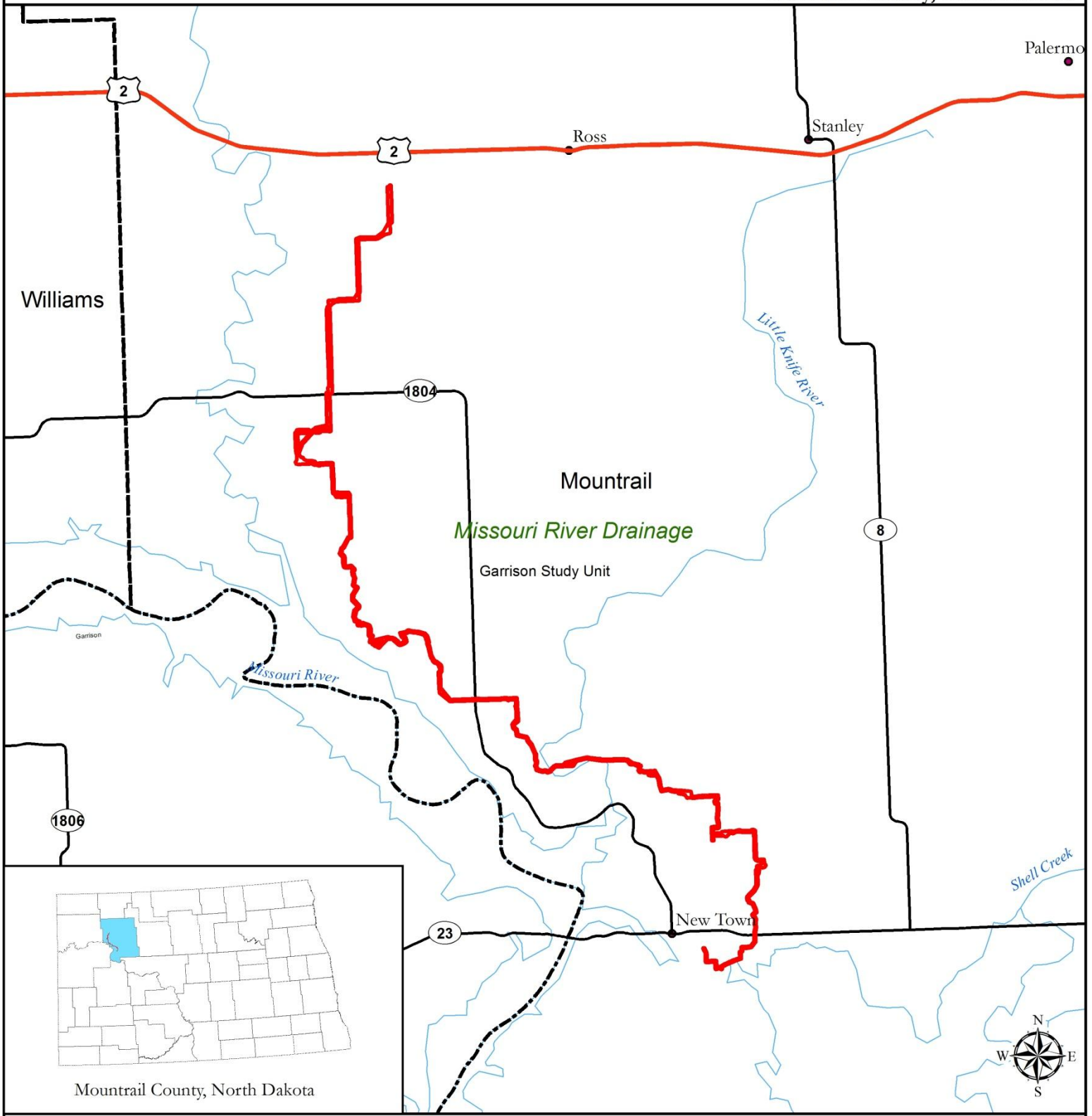
If a cultural resource was encountered, the location was marked with pin-flags and the surrounding area was intensely scrutinized to determine the nature and extent of the resource. The resource was then plotted on a USGS 7.5' Quadrangle map and a sketch-map utilizing a Trimble GPS unit was made. Cultural Resources consist of any historic or prehistoric district, site, structure, or object (usually) over 50 years of age.

Throughout the survey, field notes and overview pictures of the survey area were taken (see photos in Appendix A). Copies of maps, field notes, and photographs are located at the BCA main office in Bismarck, North Dakota.



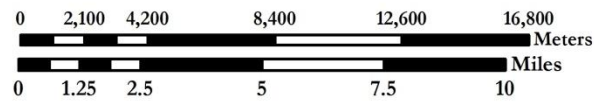
Beaver Creek ARCHAEOLOGY

Project Location For:
New Town Extension
For: Keitu Engineers & Consultants, Inc
On Behalf of: Hiland Crude, LLC
Missouri River Drainage
Mountrail County, North Dakota



Legend

 Survey Area (1,845 acres)



Base Map: USGS 7.5'
Scale: 1:24,000
UTM NAD83 Zone 14

Figure 1. Project location.

Environmental Setting

The project lies within the Garrison Study Unit (GSU), which is located in the northwestern part of North Dakota. The study unit is situated within the Glaciated Missouri Plateau Subsection, of the Great Plains Physiographic Province (SHSND 2008b:6.1). Knob-and-kettle glaciated terrain and other glacial features are common on the Coteau du Missouri. Named streams include the Big Muddy Creek, Painted Woods Creek, Douglas Creek, Shell Creek and Deepwater Creek. Named rivers include Little Muddy River, Little Knife River and White Earth River (SHSND 2008b:6.1-6.6).

Temperatures vary immensely by season with warm summers and cold winters. Precipitation averages around 16 inches annually, most of which falls as rain during the spring and summer months. Prevailing winds throughout the year average around 16 mph from the west-northwest (SHSND 2008b:6.6).

Landforms in this area consist of glaciated uplands, breaks terrain, valley wall side slopes and foot slopes, draws, alluvial terraces, and floodplains. This area of North Dakota is situated in the Northern Temperate Grasslands biome. The mixed grass prairie is dominated by western wheatgrass, blue grama, and needle-and-thread. This grassland provided good habitat for large game animals, such as bison and antelope. Gallery forests grew along the Missouri River and other tributaries and provided a suitable environment for white-tailed deer and small mammals such as muskrat and porcupine. Hardwood draws of bur oak, green ash, and juniper are part of transition zones between the grasslands and floodplain forests. Food plants in the area include chokecherry, buffaloberry, and gooseberry (SHSND 2008b:6.7).

In general, the faunal diversity in the area at contact time was as great as or greater than anywhere in the state (SHSND 2008b:6.8). Animals that could be hunted for meat, hides, feathers, teeth, bones, etc., included bison, elk, antelope, white-tailed deer, mule deer, bighorn sheep, mountain lion, coyote, foxes, eagles, hawks, owls, and a variety of waterfowl, fish, turtles, and mussels (SHSND 2008b:6.8).

Today the area contains an agricultural-based economy. Wheat, corn, sunflowers and grasslands comprise the project area. Tree cover is limited to wind blocks surrounding farmsteads and along riparian areas.

This biotic diversity along with the availability of water makes this setting favorable for human settlement, both during prehistoric and historic time-periods. One prominent natural resource in this area is Knife River Flint (KRF), which is abundant and has been quarried for centuries by native peoples. In addition, good quality Tongue River Silicified sediment, chalcedonies, and silicified wood attracted people to the area. These stones are capable of conchoidal fracturing and are ideal for stone tool production.

Native American Cultural Background

The majority of archaeological sites found within the Garrison Study Unit are stone circle sites, followed by cultural material scatters and cairn sites. These types of sites are most often found on ridge and hill settings (SHSND 2008b:6.9). The project is located near New Town, and the site distribution is dense within a one-mile radius of the survey area (where the file search was conducted). The archaeological horizons encountered in North Dakota are as follows:

Paleo-Indian Period (9500-5500 B.C.)

Due to the amount of sediment erosion and deposition that has taken place across the landscape since early Holocene times, it is difficult to locate intact Paleo components in the GSU. However, areas near tributaries on ridgetop and terrace settings have yielded plant and animal remains and shed light on Paleo-Indian subsistence patterns and lithic technologies. The Beacon Island site (32MN243A), for example, is an Agate Basin site that contains intact, unmixed, and datable remains of *Bison antiquus* and the Moe site (32MN101), which contains Folsom and later Paleo remnants, was found above today's reservoir water level. The most significant areas to discover Paleo-Indian remnants have been in the Knife River flint (KRF) principal source area and in or near the Missouri River valley. Knife River flint was the flint of choice to early groups producing lithics in this region (SHSND 2008b:6.63-6.65). "Two lithic technological procedures prominently represented at sites in the GSU are Folsom fluting and blade production" (SHSND 2008b:6.64). The Moe site yielded Folsom, Plainview (or Goshen), Agate Basin, Parallel-Oblique Flakes, and Scottsbluff points.

Plains Archaic Period (5500-400 B.C.)

Middle and Late Plains Archaic deposits are found in quickly deposited sedimentary context, which correlate with erosion in the uplands from subsequent drought. Plains Archaic remnants have frequently been discovered in upland settings as well as in terrace and riverbank locations. The Middle and Late Archaic components at the Mondrian Tree site (32MZ58) yielded bone remains of bison, antelope, elk, deer, beaver, and canids. This site also has evidence of summertime collecting and processing of plant foods, such as goosefoot, marsh elder, knotweed, dogbane, wild grape, hedge nettle, and mallow, with a sandstone grinding slab and quartzite mano (SHSND 2008b:6.66-6.67).

Early Plains Archaic components are indicated by finds of Simonsen points. Middle Plains Archaic components are represented by Oxbow, McKean, Duncan, and Hanna points. Late Plains Archaic components are indicated by finds of Yonkee and Sandy Creek points. Numerous Early, Middle, and Late Plains Archaic projectile point styles have proven to be reliable cultural/temporal indicators for relative dating in the GSU (SHSND 2008b:6.67-6.68).

Plains Woodland Period (400 B.C.–A.D. 1200)

Environmentally favorable conditions, the development of biomass, peaked twice during the Plains Woodland period, which coincide with the peak of the Besant/Sonota culture of the Middle Plains Woodland period and Late Plains Woodland period to early Plains Village period. Besant/Sonota components are rather common. Mortuary sites, such as the Boeckel-Renner site

(32ME799), along with a large number of sites in the area indicate that people with the Middle Plains Woodland Besant/Sonota material culture had permanent occupation within the GSU. Site 32ME947 is a stratified, multi-component bison kill and processing site with a Middle and Late Plains Woodland components, which is associated with the Old Women's complex. Other Late Plains Woodland cultures in the GSU are represented by Avonlea and Mortlach (SHSND 2008b:6.69-6.70). "Subsistence remains from the Mortlach component at the Evans site (32MN301) include bison, swift fox, coyote, deer, duck, and charred plum seed. Bison scapula digging tools were found, but not any remains of garden crops" (SHSND 2008b:6.71).

Ceramic technologies in the area show up around the Middle Plains Woodland period at sites such as the Nightwalker's Butte (32ML39), the Evans site, and the Mondrian Tree site (32MZ58). Mortlach ceramics display substantial variability in decoration and vessel form. Lithic technologies also show stylistic variation in the Late Plains Woodland period with Prairie Side-Notched points, Avonlea points, and other variations of side- and corner-notched points. Obsidian, from southeastern Idaho, of possible Besant/Sonota cultural affiliation was recovered from the Boeckel-Renner site (SHSND 2008b:6.71-6.73).

Plains Village Period (A.D. 1200-1780)

Prior to 1780, the GSU was mainly an area of hunting camps and temporary settlements. "Field camps were established in a sheltered tributary stream valley setting at the Mondrian Tree site (32MZ58)" and specialized activities went on in an adjacent open upland rim setting at the Edna Mae site (32MZ369) (SHSND 2008b:6.74-6.75). Sometime within the middle of the Plains Village period, there was a drought episode, during which time the subsistence base was diminished and conflict arose. As a result, settlements, such as the White Earth Creek site (32MN101), had fortification ditches and palisade walls with bastions to protect their people (SHSND 2008b:6.73-6.75).

Besides hunting, the Plains Villagers grew corn, melons, pumpkins, and beans. Several ceramic temporal trends occurred during the Plains Village period via vessel forms and types of decoration. These are associated with the Knife River phase and Scattered Village complex. Exotic nonlocal shell, such as dentalium and abalone shell, and other trade goods have been found at the Mondrian Tree site (SHSND 2008b:6.75-6.76).

Equestrian/Fur Trade Period (A.D. 1780-1880)

The advent of the Fur Trade and increased Euro-American contact in the 19th century brought about many changes in the traditional culture of groups such as the Mandan, Hidatsa, and Arikara. The Fort Berthold Reservation was established in 1870 for the Mandan, Hidatsa, and Arikara to protect them from hostile Equestrian Nomads (SHSND 2008b:6.76). Metal tools and implements obtained via trade replaced traditional items of stone, bone, wood, shell, and clay. The gun ascended to a place alongside the bow and arrow in basic weaponry. Hunting parties set up temporary tipi camps during different seasons of the year, and these settlements functioned as the field camps of pedestrian hunter-gatherers. Many of these locations, unless repeatedly reoccupied or marked by stone circles, probably contain little in the way of identifiable material traces in the archaeological record. The horse-mounted hunting and gathering peoples subsisted

on bison; however, wild plant foods, other wild animal foods, and garden produce received in exchange with settled Village gardeners also were significant components of the diet (SHSND 2008b:6.76-6.78).

Intertribal trade that occurred during the Equestrian period has its beginning in prehistoric times. The Hidatsa traded with the Crow, Dakotas, Cheyenne, and others to the south and southwest (SHSND 2008b:6.78). Fur trade between Indians and non-Indians within the GSU, such as between the Assiniboine and Fort Kipp, began around 1826. Besides trading, there are a number of written and ethnographic accounts of horse-mounted Indian groups using this area, such as the Crow, Dakota, Cheyenne, Assiniboine, and Hidatsa. The Crows traveled through here going between their Big Horn Mountain territory and their Missouri River village homeland. There may have been territorial continuity between the Crow and the Hidatsa from the time the two split in the 1500s until the Hidatsa were drastically weakened by the plagues in the late 1700s (SHSND 2008b:6.77-6.79).

Reservation Era (A.D. 1880-present)

Between 1850 and 1870, the United States government created reservations to separate the Native Americans and the influx of settlers. Where they were once able to move freely, Native Americans were now restricted to a designated area. In 1887, the Dawes Act divided tribal land into individual land allotments as a means of assimilating Native Americans into Euro-American society. By using individual land allotments as a means of breaking tribal culture, the United States government sought to cease their way of life and force conversion to Christianity, farming, and education of children at boarding schools. Children were taken from their family and placed in boarding schools (Indian schools), such as the Fort Stevenson Indian School, Bismarck Indian School, and the Carlisle Indian School in Pennsylvania, and were prohibited from using their language, practices, and culture and emphasized Euro-American culture. Today, the Dawes Act is considered the most destructive policy dealing with Native peoples (MHA Nation 2012a and 2012b; SHSND 2008c).

In 1934, in an effort to rectify some of the damage done, the Indian Reorganization Act was established that secured certain rights to Native Americans. This included the reversal of the Dawes Act and a return to local self-government on a tribal basis. However, in the late 1940s and early 1950s the Indian Reorganization Act was disassembled. The plan was to establish a policy that would eliminate tribal status all together. In 1975, the Indian Self-Determination and Education Assistance Act was enabled. This policy meant to allow tribal autonomy while still benefitting from government treaty obligations. American Indian Religious Freedom Act of 1978 was created to protect and preserve the traditional religious rights and cultural practices of Native Americans. In addition to Self-Determination, other laws were passed such as the Indian Civil Rights Act, the Indian Financing Act, and the Indian Child Welfare Act (SHSND 2008c).

Today, reservations have tribal government, which administers many governmental, economic, health, welfare, and educational programs. There are still problems on Indian Reservation, such as poverty, crime, and alcoholism; however, there is also economic growth because of small independent business, farming, and gaming (MHA Nation 2012c).

Euro-American Cultural Background

The majority of historic sites within North Dakota are farmsteads/homesteads from the late 19th century and early 20th century.

Dakota Territory (1858-1889)

The Dakota Territory consisted of the northernmost part of the land acquired from France in the 1803 Louisiana Purchase and in 1818, the United States acquired the northeastern portion of the Dakota Territory in a treaty with Great Britain. The Dakota Territory included North Dakota, South Dakota and much of present-day Montana and Wyoming. After becoming an incorporated territory in 1861, the population was slow to increase due to Indian attacks. Eventually, the population increased during the “Dakota Boom,” from 1870 to 1880, because of the railroad growth and the Homestead Act of 1862. Many of the settlers came from Germany and the Scandinavian countries of Norway and Sweden. The economic base was organized around agriculture, mining, and cattle ranching (FWP 1938).

Fur Trade – Before and after the Lewis and Clark 1803 expedition, explorers such as Sieur de la Vérendrye, David Thompson, Charles Chaboillez, Alexander Henry, and Manuel Lisa ventured into the area either looking for trade routes or to establish fur trading posts. Consequently, “between 1806 and 1850 Spaniards from St. Louis, Frenchmen from Quebec, Scots and Britons from Hudson’s Bay and Montreal, and Americans working either as free traders or engages for a dozen fur companies” headed into the region (FWP 1938; Lamar 1996:27).

Forts – The majority of the forts in the region were constructed in the 19th century. Their purpose included trading outposts, primarily fur trade and military posts for the protection of supply routes, trails, trade, and settlers. These forts, prior to the introduction of the railroad were along rivers such as the Missouri, Yellowstone, Heart, and Red rivers. Some of the more notable forts include Fort Mandan, Fort Lisa, Fort Henry, Fort Clark, Fort Union, Fort Abercrombie, Fort Berthold, Fort Buford, Fort Rice, Fort Totten, and Fort Abraham Lincoln (FWP 1938; SHSND 2008a).

Trails – Two major trails, the River Trail and the Ridge Trail, branches of the network of Red River Trails in the Red River Valley, originally were Native American trails that were later used by Euro-American fur traders. The Red River Trails connected fur trading posts, where they hauled furs and goods by ox cart. Later, the trails also connected military posts, where military supplies and men were sent. These military posts (e.g., Fort Abercrombie, Fort Totten, and Fort Ransom) also protected the trails as well as the people traveling up and down the trails. Eventually the trails and ox carts were replaced by the railroad (Gilman *et al.* 1979).

A notable trail in the western part of the region is the Bismarck-Deadwood Stage Trail (1887-1880). This trail was a stagecoach and supply line that ran between Bismarck, the western terminus of the Northern Pacific Railroad and the Black Hills gold town of Deadwood in Dakota Territory. There was transportation and economic booms associated with this trail and that boom ended when the railroad reached Pierre and an alternate line opened (SHSND 2008a).

Riverboats – The Missouri and Red rivers were important to the settlement and expansion of the Dakota Territory and were used the most for river transportation. Riverboats such as rafts, sailboats, rowboats, Mackinaws, keelboats, and steamboats brought explorers and fur traders into the Dakota Territory; however, the keelboat and steamboat were probably used more often due to their carrying capacity. “Keelboats were used primarily from 1800 to 1840, when they were replaced by steamboats” (Miller 2012). This type of boat floated high in the water allowing it to travel on shallow rivers and was able to carry 15 to 30 tons of cargo. River transportation becomes increasingly important for transporting goods to outposts and return furs downstream.

Steamboats eventually replaced the keelboats and were used for cargo and passenger transportation. The riverboat industry became a popular mode of transportation, as it was much easier to deliver goods to remote areas by boat than overland routes. In addition, “settlers and visitors could also travel much more safely by taking steamboats” (Burns 2004:14). The demise of riverboat transportation occurred for several reasons: (1) less shipping of passengers and cargo, (2) scarcity of wood yards, (3) inconvenient climate, (4) labor unrest, and (5) the railroad. Shipping on the Red River continued until 1912 and until the 1930s on the Missouri River (Burns 2004).

Railroad - Major development of the railroad in the Dakota Territory occurred in the 1870s and 1880s between the Northern Pacific Railroad and the Great Northern Railroad. Moreover, the success of the railroad was primarily because of agriculture and increasing settlement. Federal land grants were given to the Northern Pacific Railroad, who in turn sold the land, while the Great Northern Railroad bought its lands from the federal government and promoted settlement along its lines (FWP 1938).

Agriculture – The Federal Homestead Act of 1862 offered free land to anyone over 21 years-old who would cultivate and improve his 160 acres of land and live on it for 5 years. An additional 160 acres could be obtained for a tree claim and a third track of land could be acquired before or after the land was surveyed. Crops planted and harvested included spring wheat, durum, flaxseed, barley, oats, sugar beets, corn, hay, red clover, alfalfa, sweet clover, and seed potato. Ranching of cattle and sheep, poultry raising, and bee keeping was also done on farms (FWP 1938).

Bonanza farms or large farms so-called because of their almost fabulous yields of wheat open to settlement in 1863. The main purpose of Bonanza farms was to demonstrate the potential wealth of the Red River Valley. Most of these farms were owned by companies in the east, with resident managers, were run like factories with hundreds of men, and used advanced farming methods. Bonanza farms thrived in the Red River Valley during the last two decades of the 19th century; however, they were eventually subdivided into smaller farms (FWP 1938).

North Dakota (1889-Present)

North Dakota became the 39th state to enter the Union on November 2, 1889. After statehood, industrial development increased. The railroad industry expanded and peaked in 1905 through competition between the Great Northern Railway and the Soo Line. Large lignite mines opened and local brickworks and flourmills flourished in the state. Entrepreneurs built store, shops, and

offices along Main Street and town squares. While rural areas still relied on small local general stores, city consumers had more choice with locally owned department retail stores. In 1919, the Bank of North Dakota at Bismarck opened and has become a large and powerful economic force. “The State Mill and Elevator at Grand Forks, completed in 1922, provided a market for grain and a source of feed and seed [and] the state hail insurance program benefitted many farmers until its elimination in the 1960s” (SHSND 2012).

Farm homes in the eastern part of the state were small, close together with well-painted modernized buildings surrounded by neat lawns and tree groves. They had modern conveniences like electricity, telephones, radios, and cars. In the central part of the state, farms were not as modernized as eastern North Dakota but were well kept. In western North Dakota, the shacks erected to establish residence under the Federal Homestead Act were still in use in the early 20th century (FWP 1928).

For North Dakota, the 1920s and 1930s were an economic depression, starting with the 1920 collapse of wartime prices for grain. In 1921, more banks closed than in any other year, resulting in farm foreclosures. At the same time, farm size increased and many farmers mechanized their operations. A dramatic shift to motorized transportation put a greater emphasis on better roads and bridges (SHSND 2012).

The Great Depression of the 1930s slowed progress and spurred change. Rural population decreased while the city population grew. Because of the price decline of farm produce, cooperatives enjoyed a renewed popularity as farmers banded together to market their produce and reduce the cost of farming. Farmers Unions built local elevators and organized oil cooperatives that served the needs of the rural community. Despite economic problems, crop failures, dust storms, and extreme weather, North Dakota visibly modernized during the 1930s. Federal relief programs improved highways, state parks, and city services throughout the state. State departments undertook public health and safety problems, and a movement for consolidated law enforcement was started with the formation of a State Highway Patrol in 1935. “Rural schools consolidated at an increasing rate. Public utilities extended their reach through development or rural electric cooperatives; the first, Baker Electric of Cando, energized its lines in 1938” (SHSND 2012).

Immediately, after Franklin Roosevelt took the oath of office he began passing a series of laws aimed at putting people back to work, restore faith in the banking system, and shore up the economy (SHSND 2012). Among these laws included the Works Progress Administration (WPA) and the Civilian Conservation Corps (CCC). In North Dakota between 1935 and 1942, the WPA built 20,373 miles of highways and streets, 821 new bridges and viaducts, 166 miles of sidewalks, 15,012 culverts, 503 new public buildings, 61 building additions, 680 outdoor recreation facilities, 809 water wells, two irrigation projects, 39 sewage treatment plants, and nine water treatment plants, as well as other reconstructions and repairs (Robinson 1966:408). In June of 1933, some 235,000 men were enrolled in the CCC to work on federal and state public improvement projects. They built national forest trails, campsites, and visitor centers in state and national parks as well as roads and dams (SHSND 2012).

In the 1940s, with more favorable weather and improved crop yields, farmers benefitted by the higher prices stimulated by America's entry into World War II. By the end of the war, farm debt had dropped noticeably. After the war, the industrial economy continued to prosper. "In 1946, the demand for Missouri River flood control and diversion of the river's waters for irrigation and industrial development were rewarded with initiation of construction on the Garrison Dam" (SHSND 2012). The development of natural resources expanded in 1951 when oil was discovered within the Bakken near Tioga. Communication and interstate transportation systems improved and expanded in the 1950s. By the 1960s, two large Air Force Bases, one in Minot and the other in Grand Forks, had been built as a modern continuation of an historic role in Federal military strategy that began in the 1860s. In the 1950s, as private auto transportation increased, the use of passenger rail service declined, railroads had increasingly become a means of hauling freight (SHSND 2012).

The 1960s signified the start of large-scale energy development because of high demand, which lead to the development of power plants and coal strip mines. An oil boom occurred in 1978 as a result of high international crude oil prices, causing increase in the population of towns such as Dickinson, Williston, and Watford City. This oil boom and subsequent population increase did not last as worldwide oil prices declined in 1981 and oil workers moved away (SHSND 2012). Another oil boom started in 2008, is still ongoing, and resulted in enough oil and gas jobs to give North Dakota the lowest unemployment rate in the United States. In addition, the oil boom has supplied economic growth in other areas such as the service industry (Rocco 2013).

Research Goals

Due to a state agency's participation in the project, the applicant must consult with ND SHPO. The NHPA requires the applicant to consider what effects the undertaking will have on historic properties within the survey area. The three central objectives of this study are to assist the proponent with their compliance obligations, identify and assess project impacts to cultural resources located within the survey area, and to provide NRHP recommendations for historic properties encountered within the survey area. Cultural resources consist of any historic and prehistoric district, site, building, structure, or object (usually) over 50 years of age.

To be eligible for inclusion on the National Register of Historic Places (NRHP), a site must usually be more than 50 years old, retain its integrity of location, design, setting, materials, workmanship, feeling, and association and it must meet one of the following criteria:

- (a) Associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) Associated with the lives of persons significant in our past; or
- (c) Embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinctions; or
- (d) Have yielded, or may be likely to yield, information important in prehistory or history.

Project Results

Survey Conditions

Weather conditions ranged from clear to overcast skies, and the temperature ranged from 50-90°F. The project area is located on the rolling plains within the Missouri River drainage system. The survey area is located within pastureland, fallow grasslands, and agricultural land. Vegetation in the area consists of wheat, canola, and native and non-native grasses, plants and forbs. The elevation of the survey area ranged from 1,870-2,415 ft. During the course of the inventory, the GSV ranged from 30-80%, varying on location. As a result, no shovel probes were implemented, as the GSV never dropped below 30%. Areas of higher visibility, such as erosion features, areas of sparse vegetation and rodent burrows were also closely examined for cultural material.

File Search

File searches were conducted at the ND SHPO by Raina Hanley, Mary Mortensen, Eric McCann, and Amanda Person of BCA on February 12, April 22-23, May 3 and 13, August 20, and September 12, 2013 and on February 10, May 5, and May 30, 2014. The purpose of these file searches is primarily to identify previously recorded archaeological and historical sites, and also to identify previous inventories in the area. The file searches revealed 181 sites, 41 site leads, and 23 isolated finds in a one-mile radius of the survey area (see Tables 8 & 9 in Appendix C). There are 60 manuscripts on file for the sections in which the survey area is located (see Table 10 in Appendix C). Previously recorded cultural resources within or near the survey area include eight Archaeological sites (32MN72, 32MN830, 32MN1076, 32MN1080, 32MN1081, 32MN1082, 32MN1083, 32MN1088), three Historic Archaeological sites (32MN818, 32MN900, and 32MN1078), two Architectural sites (32MN1249 and 32MN1250), and one Isolated Find (32MNx843). In addition, there are eight Site Leads potentially located within the project area.

Intensive Pedestrian Survey

The 2013 and 2014 Class III inventories covered approximately 1,845 acres. The location of the project area can be seen in Figure 1 and in the maps located in Appendix B. The New Town Line Extension is a 42.6-mile long, variable 250-1,414 ft wide (1,845-acre) pipeline corridor. In 2013, 1,298 acres of the proposed project were inventoried as part of the Market Center Pipeline project (see MS #14475) and the remaining 547 acres were inventoried in 2014.

The 2013 and 2014 inventories resulted in the identification of 28 previously unrecorded cultural resources (32MN1077, 32MN1093, 32MN1094, 32MN1095, 32MN1096, 32MN1098, 32MN1099, 32MN1101, 32MN1103, 32MN1106, 32MN1107, 32MN1108, 32MN1109, 32MN1111, 32MN1113, 32MN1122, 32MN1123, 32MN1124, 32MN1125, 32MN1126, 32MN1127, 32MN1128, 32MN1129, 32MN1130, 32MN1131, 32MN1132, 32MN1300, and 32MN1301) and 23 previously recorded cultural resources (32MN72, 32MN562, 32MN818, 32MN830, 32MN900, 32MN1076, 32MN1078, 32MN1080, 32MN1081, 32MN1082, 32MN1083, 32MN1088, 32MN1249, 32MN1250, 32MNx122, 32MNx123, 32MNx130, 32MNx131, 32MNx174, 32MNx240, 32MNx241, 32MNx356, and 32MNx843). Cultural Resources include 34 Native American stone feature sites, four Archaeological Historic sites, four

Architectural sites, eight cultural material scatter Site Leads, and one Isolated Find. The findings are listed and described in Appendix D.

The Native American stone feature sites (32MN72, 32MN830, 32MN1076, 32MN1077, 32MN1080, 32MN1081, 32MN1082, 32MN1083, 32MN1088, 32MN1094, 32MN1095, 32MN1096, 32MN1098, 32MN1099, 32MN1101, 32MN1103, 32MN1106, 32MN1107, 32MN1108, 32MN1109, 32MN1113, 32MN1122, 32MN1123, 32MN1124, 32MN1125, 32MN1126, 32MN1128, 32MN1129, 32MN1130, 32MN1131, 32MN1132, 32MN1300, and 32MN1301) have been recommended potentially *eligible* for the NRHP, and BCA recommends that the sites be avoided during pipeline construction. The sites will need to be avoided by a minimum of 50 ft (from the site boundary); however, the sites located on the Fort Berthold Indian Reservation (32MN1081, 32MN1082, and 32MN1083) will need to be avoided by a minimum of 75 ft (from the site features). Sites 32MN1080, 32MN1128 and 32MN1132 (located on the Fort Berthold Indian Reservation) are in close proximity to one another; BCA recommends that proposed construction activities stay within the existing disturbed area. The existing disturbed area corridor is 61 ft in width. Temporary fencing along the site boundary in conjunction with site monitoring during construction would minimize any adverse effect to the site. No avoidance is necessary for site 32MN562, as the site has been destroyed by a previous pipeline project.

The four Archaeological Historic sites (32MN818, 32MN900, 32MN1078, 32MN1127) and four Architectural sites (32MN1093, 32MN1111, 32MN1249, and 32MN1250) are recommended *not eligible* for the NRHP. No avoidance is recommended for these sites during this project; however, avoidance via boring is recommended for site 32MN818, as it is an active railroad.

The previously recorded Isolated Find (32MNx843) was not relocated during the cultural resources inventory. Isolated Finds are recommended *not eligible* to the NRHP, and no avoidance is necessary. During the pedestrian survey, no evidence of the Site Leads (32MNx122, 32MNx123, 32MNx130, 32MNx131, 32MNx174, 32MNx240, 32MNx241, and 32MNx356) was observed within the project area.

Table 2. Cultural Resources located within or near the survey area.

SITS #	Affiliation	Description	NRHP Status
32MN72	Period Unknown	Stone Circles, Eagle Trapping Pit, CM Scatter	Unevaluated
32MN562	Period Unknown	Cairns (Destroyed)	Not Eligible
32MN818	Historical	Soo Line	Not Eligible
32MN830	Period Unknown	Stone Circles, Other Stone Features	Unevaluated
32MN900	Historical	Foundations, Depressions	Not Eligible
32MN1076	Period Unknown	Stone Circle	Unevaluated
32MN1077	Period Unknown	Stone Circle	Unevaluated
32MN1078	Historical	Depression (Destroyed)	Not Eligible
32MN1080	Period Unknown	Stone Circles	Unevaluated
32MN1081	Period Unknown	Linear Alignment	Unevaluated
32MN1082	Period Unknown	Linear Alignment, Dirt Mound	Unevaluated
32MN1083	Period Unknown	Stone Circle, Cairns	Unevaluated
32MN1088	Period Unknown	Cairn	Unevaluated
32MN1093	Architectural	Barn, Granary, Well & Pump	Not Eligible

New Town Line Extension: A Comprehensive Report of Class III Intensive Cultural Resource Inventories from 2013 and 2014 in Mountrail County, North Dakota

SITS #	Affiliation	Description	NRHP Status
32MN1094	Period Unknown	Stone Circles	Unevaluated
32MN1095	Period Unknown	Stone Circle, Stone Arc	Unevaluated
32MN1096	Period Unknown	Stone Circles	Unevaluated
32MN1098	Period Unknown	Stone Circles	Unevaluated
32MN1099	Period Unknown	Cairn, Stone Circle	Unevaluated
32MN1101	Period Unknown	Stone Circle	Unevaluated
32MN1103	Period Unknown	Cairns, Stone Circle	Unevaluated
32MN1106	Period Unknown	Stone Circle	Unevaluated
32MN1107	Period Unknown	Stone Circles	Unevaluated
32MN1108	Period Unknown	Stone Circle	Unevaluated
32MN1109	Period Unknown	Cairn, Stone Circles, Stone Arc	Unevaluated
32MN1111	Architectural	Outhouse, Farmhouse, Collapsed Storage Building	Not Eligible
32MN1113	Period Unknown	Cairn	Unevaluated
32MN1122	Period Unknown	Stone Circle	Unevaluated
32MN1123	Period Unknown	Cairn, Stone Circle	Unevaluated
32MN1124	Period Unknown	Stone Circle	Unevaluated
32MN1125	Period Unknown	Cairn	Unevaluated
32MN1126	Period Unknown	Stone Circle	Unevaluated
32MN1127	Historical	Depression	Not Eligible
32MN1128	Period Unknown	Cairn, Stone Circles	Unevaluated
32MN1129	Period Unknown	Cairn, Stone Circles	Unevaluated
32MN1130	Period Unknown	Stone Circle	Unevaluated
32MN1131	Period Unknown	Cairn	Unevaluated
32MN1132	Period Unknown	Stone Circles	Unevaluated
32MN1249	Architectural	Culvert	Not Eligible
32MN1250	Architectural	Culvert	Not Eligible
32MN1300	Period Unknown	Stone Circle	Unevaluated
32MN1301	Period Unknown	Cairn	Unevaluated
32MNx122	Period Unknown	Site Lead: CM Scatter	Unevaluated
32MNx123	Period Unknown	Site Lead: CM Scatter	Unevaluated
32MNx130	Period Unknown	Site Lead: CM Scatter	Unevaluated
32MNx131	Period Unknown	Site Lead: CM Scatter	Unevaluated
32MNx174	Period Unknown	Site Lead: CM Scatter	Unevaluated
32MNx240	Period Unknown	Site Lead: CM Scatter	Unevaluated
32MNx241	Period Unknown	Site Lead: CM Scatter	Unevaluated
32MNx356	Period Unknown	Site Lead: CM Scatter	Unevaluated
32MNx843	Period Unknown	Isolated Find: Flake	Not Eligible

Summary and Recommendations

Between May and September 2013 and on June 10-12 and July 11, 2014, BCA conducted Class III Cultural Resource Inventories of the proposed project area. The New Town Line Extension is a 42.6-mile long, variable 250-1,414 ft wide (1,845-acre) pipeline corridor. The 2013 and 2014 Class III Inventories covered approximately 1,845 acres. In 2013, 1,298 acres of the proposed project were inventoried as part of the Market Center Pipeline project (see MS #14475) and the remaining 547 acres were inventoried in 2014. The locations of the survey area can be seen on the map located in Appendix B.

The file search revealed 181 sites, 41 site leads, and 23 isolated finds in a one-mile radius of the survey area.

During the inventory, BCA archaeologists identified 28 previously unrecorded cultural resources (32MN1077, 32MN1093, 32MN1094, 32MN1095, 32MN1096, 32MN1098, 32MN1099, 32MN1101, 32MN1103, 32MN1106, 32MN1107, 32MN1108, 32MN1109, 32MN1111, 32MN1113, 32MN1122, 32MN1123, 32MN1124, 32MN1125, 32MN1126, 32MN1127, 32MN1128, 32MN1129, 32MN1130, 32MN1131, 32MN1132, 32MN1300, and 32MN1301) and 23 previously recorded cultural resources (32MN72, 32MN562, 32MN818, 32MN830, 32MN900, 32MN1076, 32MN1078, 32MN1080, 32MN1081, 32MN1082, 32MN1083, 32MN1088, 32MN1249, 32MN1250, 32MNx122, 32MNx123, 32MNx130, 32MNx131, 32MNx174, 32MNx240, 32MNx241, 32MNx356, and 32MNx843). Cultural Resources include 34 Native American stone feature sites, four Archaeological Historic sites, four Architectural sites, eight cultural material scatter Site Leads, and one Isolated Find.

The Native American stone feature sites (32MN72, 32MN830, 32MN1076, 32MN1077, 32MN1080, 32MN1081, 32MN1082, 32MN1083, 32MN1088, 32MN1094, 32MN1095, 32MN1096, 32MN1098, 32MN1099, 32MN1101, 32MN1103, 32MN1106, 32MN1107, 32MN1108, 32MN1109, 32MN1113, 32MN1122, 32MN1123, 32MN1124, 32MN1125, 32MN1126, 32MN1128, 32MN1129, 32MN1130, 32MN1131, 32MN1132, 32MN1300, and 32MN1301) have been recommended potentially *eligible* for the NRHP, and BCA recommends that the sites be avoided during pipeline construction. The sites will need to be avoided by a minimum of 50 ft (from the site boundary); however, the sites located on the Fort Berthold Indian Reservation (32MN1081, 32MN1082, and 32MN1083) will need to be avoided by a minimum of 75 ft (from the site features). Sites 32MN1080, 32MN1128 and 32MN1132 (located on the Fort Berthold Indian Reservation) are in close proximity to one another, BCA recommends that proposed construction activities stay within the existing disturbed area (see Table 3). The existing disturbed area corridor is 61 ft in width. Temporary fencing along the site boundary in conjunction with site monitoring during construction would minimize any adverse effect to the site. No avoidance is necessary for site 32MN562, as the site has been destroyed by a previous pipeline project.

Table 3. Sites around the 61 ft disturbance area corridor.

SITS #	Description	NRHP Status	Recommendation
32MN1080	Stone Circles	Unevaluated	Avoidance
32MN1128	Stone Circles	Unevaluated	Avoidance
32MN1132	Stone Circles	Unevaluated	Avoidance

The four Archaeological Historic sites (32MN818, 32MN900, 32MN1078, 32MN1127) and four Architectural sites (32MN1093, 32MN1111, 32MN1249, and 32MN1250) are recommended *not eligible* for the NRHP. No avoidance is recommended for these sites during this project; however, avoidance via boring is recommended for site 32MN818, as it is an active railroad.

The previously recorded Isolated Find (32MNx843) was not relocated during the cultural resources inventory. Isolated Finds are *not eligible* to the NRHP, and no avoidance is recommended necessary. During the pedestrian survey, no evidence of the Site Leads (32MNx122, 32MNx123, 32MNx130, 32MNx131, 32MNx174, 32MNx240, 32MNx241, and 32MNx356) were observed within the project area.

Four sites have been previously impacted by past pipeline construction (see Table 4). Of these four sites, two were previously recorded. Site 32MN562, a Native American stone feature site comprised of two cairns, was destroyed by an existing pipeline, not associated with this project, and is no longer eligible for the NRHP. Site 32MN1078, an *ineligible* Archaeological Historic site, consisting of a depression, was destroyed by an existing pipeline not associated with this project. As the site is not eligible for the NRHP not avoidance is necessary.

An existing pipeline, not associated with this project, has impacted the northwestern portion of the stone circle feature of site 32MN1300, which was recorded during this inventory. However, the site retains integrity, as the stone circle is still intact with some stones disturbed and is considered potentially *eligible* to the NRHP and should be avoided in the future. An as built portion of the New Town Line Extension pipeline is located directly adjacent to site 32MN1301, a cairn, recorded during this inventory. The cairn was not disturbed and retains integrity. The site is considered potentially *eligible* to the NRHP and should be avoided in the future. Site 32MN1300 is recommended to be avoided by a 50-ft buffer in conjunction with site monitoring. For site 32MN1301, it is recommended that construction activities stay within the previous pipeline disturbance on the opposite side of the existing pipeline. As a result of the avoidance measures, sites 32MN1300 and 32MN1301 will not be further impacted by the proposed project.

Table 4. Previously impacted sites.

SITS #	Description	NRHP Status	Recommendation
32MN562	Cairns (Destroyed)	Not Eligible	No avoidance necessary
32MN1078	Historic Depression (Destroyed)	Not Eligible	No avoidance necessary
32MN1300	Stone Circle	Unevaluated	Avoidance
32MN1301	Cairn	Unevaluated	Avoidance

The survey area is located in areas where it could potentially have an adverse effect on cultural resources (see Table 5). See Appendix D for site avoidance measures.

Table 5. Summary of Cultural Resources identified during the inventory located in or near the survey area.

SITS #	Description	NRHP Status	Recommendation
32MN72	Stone Circles, Eagle Trapping Pit, CM Scatter	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN562	Cairns (Destroyed)	Not Eligible	No avoidance necessary
32MN818	Soo Line	Not Eligible	Avoidance via boring
32MN830	Stone Circles, Other Stone Features	Unevaluated	Avoidance of 50' from the site boundary & monitoring or by staying within the existing disturbance
32MN900	Foundations, Depressions	Not Eligible	No avoidance necessary

New Town Line Extension: A Comprehensive Report of Class III Intensive Cultural Resource Inventories from 2013 and 2014 in Mountrail County, North Dakota

SITS #	Description	NRHP Status	Recommendation
32MN1076	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1077	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1078	Depression (Destroyed)	Not Eligible	No avoidance necessary
32MN1080	Stone Circles	Unevaluated	Avoidance by staying within the existing disturbance
32MN1081	Linear Alignment	Unevaluated	Avoidance of 75' from the site features & monitoring
32MN1082	Linear Alignment, Dirt Mound	Unevaluated	Avoidance of 75' from the site features & monitoring
32MN1083	Stone Circle, Cairns	Unevaluated	Avoidance of 75' from the site features & monitoring
32MN1088	Cairn	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1093	Barn, Granary, Well & Pump	Not Eligible	No avoidance necessary
32MN1094	Stone Circles	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1095	Stone Circle, Stone Arc	Unevaluated	Avoidance of 50' from the site boundary & monitoring or by staying within the existing disturbance
32MN1096	Stone Circles	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1098	Stone Circles	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1099	Cairn, Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1101	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1103	Cairns, Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1106	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1107	Stone Circles	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1108	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1109	Cairn, Stone Circles, Stone Arc	Unevaluated	Avoidance of 50' from the site boundary & monitoring or by staying within the existing disturbance
32MN1111	Outhouse, Farmhouse, Collapsed Storage Building	Not Eligible	No avoidance necessary
32MN1113	Cairn	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1122	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1123	Cairn, Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring

New Town Line Extension: A Comprehensive Report of Class III Intensive Cultural Resource Inventories from 2013 and 2014 in Mountrail County, North Dakota

SITS #	Description	NRHP Status	Recommendation
32MN1124	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1125	Cairn	Unevaluated	Avoidance of 50' from the site boundary & monitoring or by staying within the existing disturbance
32MN1126	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1127	Depression	Not Eligible	No avoidance necessary
32MN1128	Stone Circles	Unevaluated	Avoidance by staying within the existing disturbance
32MN1129	Cairn, Stone Circles	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1130	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1131	Cairn	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1132	Stone Circles	Unevaluated	Avoidance by staying within the existing disturbance
32MN1249	Culvert	Not Eligible	No avoidance necessary
32MN1250	Culvert	Not Eligible	No avoidance necessary
32MN1300	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring or by staying within the existing disturbance
32MN1301	Cairn	Unevaluated	Avoidance by staying within the existing disturbance
32MNx122	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx123	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx130	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx131	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx174	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx240	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx241	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx356	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx843	Isolated Find: Flake	Not Eligible	No avoidance necessary

A buffer of 50 ft is recommended between the site boundaries and proposed construction activities; however, on the Fort Berthold Indian Reservation a buffer of 75 ft is recommended between the site features and proposed construction activities. In areas where a site is near an already constructed pipeline, it is recommended that construction activities stay on the opposite side of the existing pipeline. In areas where there is pipeline disturbance through a site, it is recommended that proposed construction activities stay within the already disturbed corridor if a 50-ft avoidance cannot be achieved. Fencing along site buffer lines in conjunction with site monitoring during construction would minimize any adverse effect to the sites.

Beaver Creek Archaeology, Inc. recommends that *unevaluated*/potentially *eligible* sites within 100 ft of the survey area have temporary site buffer fencing and monitoring during construction around these sites (see Avoidance Maps in Appendix D). No avoidance is recommended

necessary for *ineligible* sites within or near the survey area. Furthermore, BCA recommends that the “Unanticipated Discovery Plan” (UDP) approved by the ND SHPO and created by Keitu Engineers and Consulting, Inc. be used during the construction phase of the project.

Provided that the sites listed in Table 5 are avoided by the following recommendations of boring, avoidance, site buffer fencing, and monitoring, Beaver Creek Archaeology, Inc. recommends that the project proceed under a *No Adverse Effect* as surveyed, mapped and described herein.

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Appendix A: Survey Area Photographs



Figure 2. Overview of the survey area. View to the north.



Figure 3. Overview of the survey area. View to the northeast.

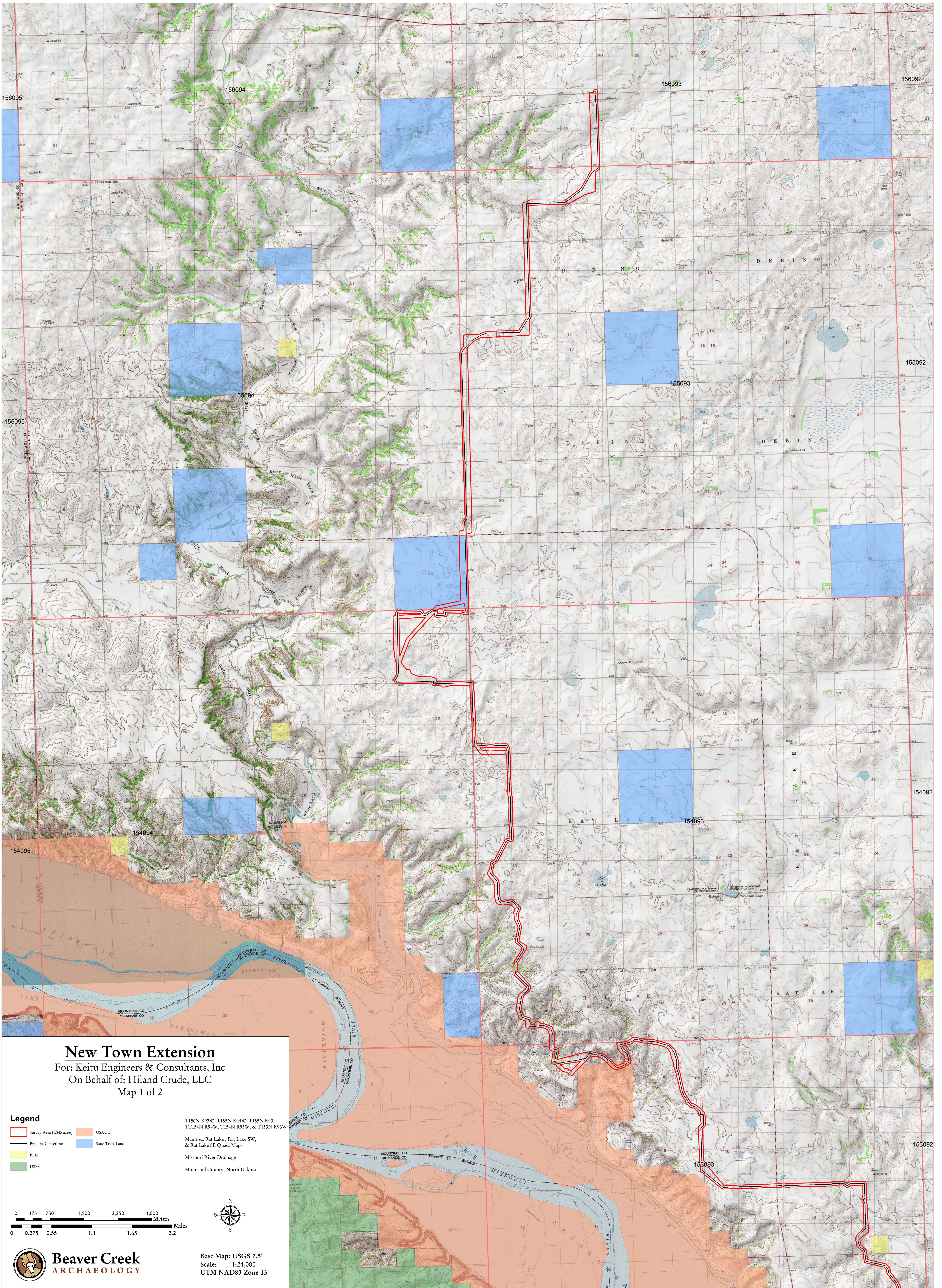


Figure 4. Overview of the survey area. View to the northwest.



Figure 5. Overview of the survey area. View to the south.

Appendix B: Maps



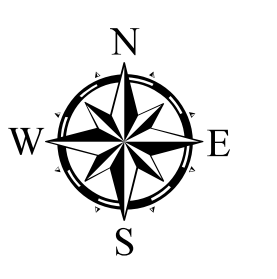
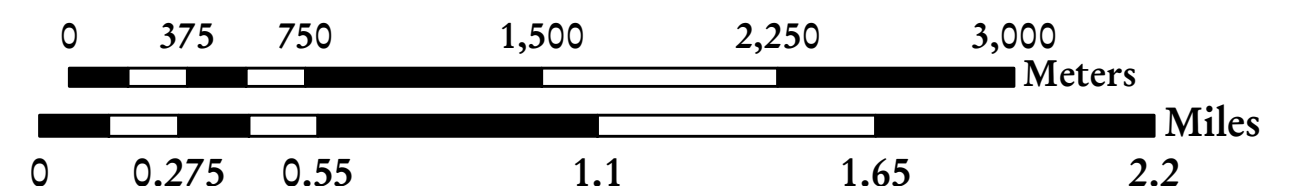
New Town Extension

For: Keitu Engineers & Consultants, Inc
 On Behalf of: Hiland Crude, LLC
 Map 1 of 2

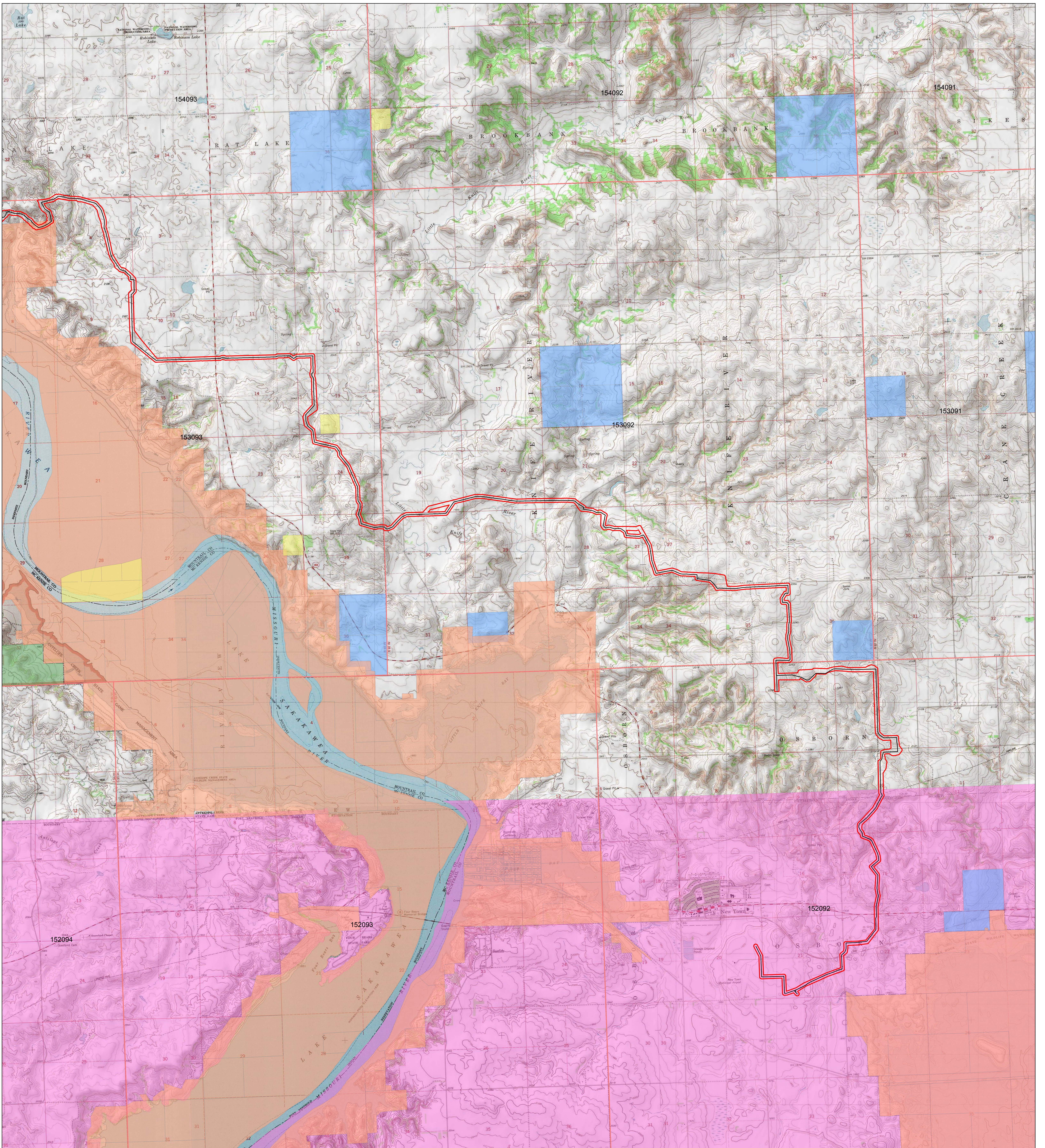
Legend

- Survey Area (1,845 acres)
- USACE
- Pipeline Centerline
- BLM
- USFS
- State Trust Land

T156N R93W, T155N R94W, T155N R93,
 T154N R94W, T154N R93W, & T153N R93W
 Manitou, Rat Lake, Rat Lake SW,
 & Rat Lake SE Quad Maps
 Missouri River Drainage
 Mountrail County, North Dakota



Base Map: USGS 7.5'
 Scale: 1:24,000
 UTM NAD83 Zone 13



New Town Extension

For: Keitu Engineers & Consultants, Inc
 On Behalf of: Hiland Crude, LLC
 Map 2 of 2

Legend

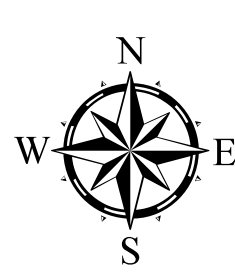
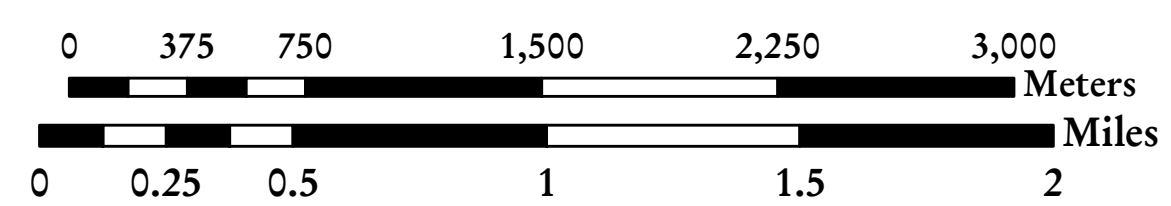
- Survey Area (1,845 acres)
- Pipeline Centerline
- BLM
- Tribal Lands

T154N R93W, T153N R93W, T153N R92W,
 & T152N R92W

Rat Lake SW, Rat Lake SE, Belden SW,
 & New Town Quad. Maps

Missouri River Drainage

Mountrail County, North Dakota



Base Map: USGS 7.5'
 Scale: 1:24,000
 UTM NAD83 Zone 13

Appendix C: Literature Search

Information Removed due to ND SHPO Regulations for Public Dispersal of Documents

Appendix D: Site Descriptions

Information Removed due to ND SHPO Regulations for Public Dispersal of Documents

APPENDIX 4.C LANDOWNER LIST

Mountrail County

Section	Twp	Range	Owner	Address	City, State, ZIP
32	156N	93W	SHAWN IWEN	P.O. BOX 212	STANLEY, ND 58784-0212
32	156N	93W	DUANE & DORIS LIFFRIG	1819 VALLEY DRIVE	BISMARCK, ND 58503-0196
5	155N	93W	LEO & FRED A VACHAL	5030 100 TH AVE NW	WHITE EARTH, ND 58694-9673
5	155N	93W	ALAN & LINDA F VACHAL	5980 93 RD AVE NW	ROSS, ND 58776-9038
5, 6, 7, 18	155N	93W	HOWARD D & JANICE REHAK	PO BOX 131	STANLEY, ND 58784-0131
18, 19, 30	155N	93W	BETTY FREBORG, H.LEE, EARL & DENNIS ABRAHAMSON & LINDA BOLIN	PO BOX 313	TIOGA, ND 58852-0313
19	155N	93W	ERNEST L & ALICE TOMES	5680 96 TH AVE NW	ROSS, ND 58776-9028
19	155N	93W	KATHLEEN M RULAND	9545 57 TH ST NW	ROSS, ND 58776-9105
25	155N	94W	DEAN A REHAK	5733 97 TH AVE NW	ROSS, ND 58776-9030
36	155N	94W	STATE OF NORTH DAKOTA		
1, 2, 12	154N	94W	FRED C SORENSON	5397 98 TH DR NW	WHITE EARTH, ND 58794-9675
1, 12	154N	94W	EDWARD KRIEGER	5355 98 TH DR NW	WHITE EARTH, ND 58794-9675
7	154N	93W	BILLADEAU BROS	6976 23 RD ST NW	PARSHALL, ND 58770-9665
18	154N	93W	MICHAEL J & KIMBERLY D SORENSON	9039 59 TH ST NW	ROSS, ND 58776-9055
18	154N	93W	MONTE E LARMER	9855 5ND ST NW	WHITE EARTH, ND 58794-9681
19	154N	93W	KEVIN & JOANNE LAPICA	9460 53 RD ST NW	ROSS, ND 58776-9067
19	154N	93W	JEFFREY L & LYNETTE M MEIERS	5096 95 TH AVE NW	ROSS, ND 58776-9078

Hiland Crude, LLC
Route Application Exhibits
New Town Expansion Project

Section	Twp	Range	Owner	Address	City, State, ZIP
19, 30, 31	154N	93W	V P & R COOP GRAZING ASSOC.	5030 100 TH AVE NW	WHITE EARTH, ND 58794-9673
31	154N	93W	CONTINENTAL RESOURCES INC	PO BOX 269091	OKLAHOMA CITY, OK 73126-9091
5, 6	153N	93W	CONTINENTAL RESOURCES INC	PO BOX 269091	OKLAHOMA CITY, OK 73126-9091
4, 5	153N	93W	ROGER & MICHELLE HARSTAD	5580 78 TH AVE NW	PALERMO, ND 58769-9566
33	154N	93W	ROGER & MICHELLE HARSTAD	5580 78 TH AVE NW	PALERMO, ND 58769-9566
9, 10, 15	153N	93W	ARTHUR LANGVED	4561 HWY 1804	NEW TOWN, ND 58763
13, 14, 24	153N	93W	DELORIS OJA TRUSTEE & LESLIE CURREN & HAZEL IVERSON	PO BOX 1063	STANLEY, ND 58784-1063
24, 25	153N	93W	MILDRED ROGGENBUCK	4370 91 ST AVE NW	NEW TOWN, ND 58763-9174
24, 25, 30	153N	93W	MARLENE M HOLMBERG, DOROTHY TULLY, LEONARD & KENNETH SCOTT, WALTER R & VIVIAN EVANS, R & V EVENS FAMILY TRUST	PO BOX 52	STANLEY, ND 58784-0052
19, 20, 21, 30	153N	92W	DENNIS C DILWORTH, LAUREL JOHNSON, KRISTY DONALDSON, WESLEY & LESLIE WHEELER, DENNIS & KAREN PATTERSON	562 PLATEAU CT	CAMARILLO CA 93010-2156
28	153N	92W	RONALD E HANSEN	4288 87 TH DR NW	NEW TOWN, ND 58763-9109
26, 27, 35	153N	92W	CURTIS BREHM & ALYSON BREHM- JOHNSON	PO BOX 880	NEW TOWN, ND 58763-0880
4	152N	92W	CURTIS BREHM & ALYSON BREHM- JOHNSON	PO BOX 880	NEW TOWN, ND 58763-0880
4, 3, 10	152N	92W	JACK PENNINGTON	8898 36 TH ST NW	NEW TOWN, ND 58763-9507
3	152N	92W	DONALD R PENNINGTON	2651 89 TH AVE NW	NEW TOWN, ND 58763-9505
3	152N	92W	KENNETH V & JOAN A LITTLEFIELD LLP	7897 46 TH ST NW	NEW TOWN, ND 58763-9575
10	152N	92W	JACKIE L & KAREN M PENNINGTON	8898 36 TH ST NW	NEW TOWN, ND 58763-9507
15	152N	92W	WENDELL W FERTIG GTRUST	PO BOX 222	LARNED, KS 67550-0222

Hiland Crude, LLC
Route Application Exhibits
New Town Expansion Project

Section	Twp	Range	Owner	Address	City, State, ZIP
22	152N	92W	IRONHIDE PROPERTIES, LLC	465 W. 4000 S.	VERNAL, UT 84078
21	152N	92W	SHARI L. HORNADAY	704 CONFLOWER DRIVE	MINOT, ND 58701
21	152N	92W	SHERRY REYNOLDS	1006 CLIFF SWALLOW DR.	GRANBURY, TX 76048-2648
21	152N	92W	TARA SALUTE	8537 WEST PINE BLUFF ST.	CRYSTAL RIVER, FL 34428
21	152N	92W	ADRELL & MAVIS MOE	PO BOX 760	NEW TOWN, ND 58763
20	152N	92W	DAKOTA PLAINS HOLDINGS, INC.	294 GROVE LANE EAST	WAYZATA, MN 55391

APPENDIX 4.D.1

North Dakota Federal and State Plant Species of Concern

TABLE 4.D.1.A						
NORTH DAKOTA'S PLANT SPECIES OF CONCERN						
<u>Scientific Name</u>	<u>Common Name</u>	<u>Global</u>	<u>State</u>	<u>USFWS</u>	<u>USFS</u>	<u>Habitat</u>
<i>Acorus americanus</i>	Sweetflag	G5	S3			Peatlands, fens, seeps
<i>Agrostis exarata</i>	Spike Bentgrass	G5	S1		W	Moist habitats
<i>Allium canadense</i>	Meadow Onion	G5	S1			Prairies, open woods
<i>Allium tricoccum</i>	Wild Garlic	G5	SU			Rich undisturbed woods
<i>Apios americana</i>	American Groundnut	G5	SH			Moist woods, thickets banks
<i>Arabis canadensis</i>	Sicklepod	G5	S1			Mesic woodlands
<i>Arnica cordifolia</i>	Heart-leaved Arnica	G5	SU			Open woodlands
<i>Asclepias lanuginosa</i>	Woolly Milkweed	G4?	S1			Sandy or rocky calcareous prairie
<i>Asclepias sullivantii</i>	Sullivant's Milkweed	G5	SU			Mesic tallgrass prairies
<i>Astragalus australis</i>	Indian Milkvetch	G5	S2		W	Open wooded hillsides, bluffs, limestone
<i>Astragalus drummondii</i>	Drummond's Milkvetch	G5	S1		W	Prairies to open wooded/brushy hillsides/ravines, all soil
<i>Astragalus neglectus</i>	Cooper's Milkvetch	G4	S1			Sandy, gravelly shores, mesic gravelly prairie
<i>Astragalus vexilliflexus</i>	Bent-flowered Milkvetch	G4	S3		W	Rocky knolls and open wooded hillsides
<i>Athyrium filix-femina</i>	Northern Lady-fern	G5	S3			Moist woods, thickets, bogs, along streams
<i>Botrychium campestre</i>	Prarie Grapefern	G3G4	S1			Dry, gravelly or sandy prairies
<i>Botrychium matricariifolium</i>	Chamomile Grapefern	G5	S1			Moist woodlands
<i>Botrychium minganense</i>	Moonwort	G4G5	S1			Wooded, often north-facing slopes, meadows
<i>Botrychium multifidum</i>	Leathery Grapefern	G5	S1			Wet meadows, rich woodlands
<i>Botrychium simplex</i>	Least Grapefern	G5	SU			Meadows, barrens, woods, subacid soils
<i>Bromus carinatus</i>	Mountain Brome	G5	S1		W	Disturbed, moist woods, dry meadows, sagebrush
<i>Bromus kalmii</i>	Kalm's Brome	G5	SU			Open oak woods, sandy soils
<i>Calla palustris</i>	Water Arum	G5	S2			Northern marshes and swamps

TABLE 4.D.1.A						
NORTH DAKOTA'S PLANT SPECIES OF CONCERN						
<u>Scientific Name</u>	<u>Common Name</u>	<u>Global</u>	<u>State</u>	<u>USFWS</u>	<u>USFS</u>	<u>Habitat</u>
<i>Campanula aparinoides</i>	Marsh Bellflower	G5	S2			Wetland thickets, seepage, peatlands
<i>Cardamine bulbosa</i>	Spring Cress	G5	S1			Wet meadows, wood springs
<i>Carex alopecoidea</i>	Foxtail Sedge	G5	S2			Damp, rich, wooded areas
<i>Carex athrostachya</i>	Jointed-spike Sedge	G5	S3			Low prairie, marsh margins
<i>Carex backii</i>	Back's Sedge	G5	S2			Damp, wooded areas
<i>Carex brunnescens</i>	Brown Sedge	G5	S1			Fens, wet wooded areas
<i>Carex buxbaumii</i>	Buxbaum's Sedge	G5	S1			Wet meadows, fens
<i>Carex capillaris</i>	Hair-like Sedge	G5	S1			Wet meadows, fens
<i>Carex chordorrhiza</i>	Creeping Sedge	G5	S1			Sphagnum bogs, poor fens
<i>Carex convoluta</i>	Spiral Sedge	G5T3	S?			Rich, deciduous woodlands
<i>Carex diandra</i>	Lesser-panicled Sedge	G5	S2			Swamps, meadows, shores
<i>Carex echinata ssp. echinata</i>	Spiny Sedge	G5T5	S1			Sphagnum bogs
<i>Carex festucacea</i>	Fescue Sedge	G5	SU			Wooded areas
<i>Carex foenea (Carex siccata)</i>	Dry-spiked Sedge	G5	S1		W	Dry open soil in wooded areas
<i>Carex formosa</i>	Handsome Sedge	G4	S1			Low, moist, eastern woodlands
<i>Carex garberi</i>	Elk Sedge	G5	S1			Fens, swamps, pond margins
<i>Carex gracillima</i>	Graceful Sedge	G5	S1			Moist swampy woods
<i>Carex gynocrates</i>	Pistillate Sedge	G5	S1			Peaty fens
<i>Carex haydenii</i>	Hayden's Sedge	G5	S1			Wet meadows, sloughs
<i>Carex lasiocarpa</i>	Wiregrass Sedge	G5	S3			Sphagnum bogs, seepage-fed peatlands, lake borders
<i>Carex leptalea</i>	Delicate Sedge	G5	S2			Shrubby peatland fens, swampy woods and thickets
<i>Carex limosa</i>	Mud Sedge	G5	S2			Sphagnum bogs, fens
<i>Carex nebrascensis</i>	Nebraska Sedge	G5	S2			Wet meadows, stream margins
<i>Carex pedunculata</i>	Peduncled Sedge	G5	S1			Moist oak or birch woodlands

TABLE 4.D.1.A
NORTH DAKOTA'S PLANT SPECIES OF CONCERN

<u>Scientific Name</u>	<u>Common Name</u>	<u>Global</u>	<u>State</u>	<u>USFWS</u>	<u>USFS</u>	<u>Habitat</u>
<i>Carex richardsonii</i>	Richardson's Sedge	G5	S1			Low, usually sandy, prairie
<i>Carex scirpoidea</i>	Spikerush Sedge	G5	S1		W	Rocky slopes, wet meadows
<i>Carex scoparia</i>	Pointed Broom Sedge	G5	SH			Damp woods, low prairie, lakeshores
<i>Carex simulata</i>	Copycat Sedge	G5	S2			Calcareous fens, wet meadows
<i>Carex sterilis</i>	Sterile Sedge	G4	S1			Seepage peatland fens, wet meadows
<i>Caulophyllum thalictroides</i>	Blue Cohosh	G4G5	S1			Moist rich woods
<i>Chaenactis douglasii</i>	Douglas' Dusty-maiden	G5	S2			Scoria slopes and buttes
<i>Cheilanthes feei</i>	Slender Lip fern	G5	S1			Dry rocky slopes, sandstone, limestone
<i>Chenopodium subglabrum</i>	Smooth Goosefoot	G3G4	S1		S	Sandy river terraces, sand colluviums, sand blowouts, sand dunes
<i>Clematis columbiana</i> var. <i>tenuiloba</i>	Slender-lobed Clematis	G5? T4?	S1		W	Rocky slopes, limestone soils
<i>Collinsia parviflora</i>	Blue lips	G5	S2		S	Mesic slopes of buttes
<i>Crataegus mollis</i>	Downy Hawthorn	G5	S1			Open mesic woods
<i>Cryptantha torreyana</i>	Torrey's Cryptantha	G5	S1		S	Dry plains, pine slopes, on scoria
<i>Cyperus bipartitus</i>	Brook Flatsedge	G5	S1			Cool, spring-fed streams
<i>Cyperus diandrus</i>	Low Flatsedge	G5	S2			Sandy or muddy shores, stream margins
<i>Cypripedium candidum</i>	White Lady's Slipper	G4	S2			Low prairie, wet meadows
<i>Cypripedium parviflorum</i>	Small Yellow Lady's-slipper orchid	G5	S2			Damp woods, fens, streambanks
<i>Cypripedium parviflorum</i> var. <i>pubescens</i>	Large Yellow Lady's-slipper	G5T5	S2			Boggy areas, wet prairies
<i>Cypripedium reginae</i>	Showy Lady's-slipper	G4	S2			Swampy woodlands, thickets, fens
<i>Dalea enneandra</i>	Nine-anthered Dalea	G5	S2			Sandy or gravelly slopes, dry mixed grass prairies
<i>Desmanthus illinoensis</i>	Prairie Mimosa	G5	S1			Prairies with rocky or sandy soils

TABLE 4.D.1.A						
NORTH DAKOTA'S PLANT SPECIES OF CONCERN						
<u>Scientific Name</u>	<u>Common Name</u>	<u>Global</u>	<u>State</u>	<u>USFWS</u>	<u>USFS</u>	<u>Habitat</u>
<i>Dicentra cucullaria</i>	Dutchman's Breeches	G5	S1			Rich eastern woodlands
<i>Diervilla lonicera</i>	Dwarf Honeysuckle	G5	S3			Shady woodlands, usually aspen
<i>Dirca palustris</i>	Leatherwood	G4	S1			Shady, damp woodland slopes
<i>Drosera rotundifolia</i>	Round-leaved Sundew	G5	S1			Acid bogs, swamps
<i>Dryopteris carthusiana</i>	Spinulose Woodfern	G5	S3			Rich, moist woods, ravines, boggy areas, alder thickets
<i>Dryopteris cristata</i>	Crested Woodfern	G5	S3			Swampy woods and thickets, seeps
<i>Eleocharis parvula</i>	Dwarf Spikerush	G5	S2			Brackish, alkaline shores
<i>Eleocharis pauciflora</i>	Few-flowered Spikerush	G5	S3			Calcareous fens, seeps
<i>Eleocharis wolfii</i>	Wolf's Spikerush	G3?	SH			Shores, low, wet prairie
<i>Elymus glaucus</i>	Blue Wildrye	G5	S2			Open woods, prairie slopes
<i>Epilobium coloratum</i>	Purple-leaved Willowherb	G5	S3			Marshes, seeps, shores
<i>Epilobium pygmaeum</i> (<i>Boisduvalia glabella</i>)	Smooth-spike Primrose	G5	S2		W	Small streams, vernal pools
<i>Equisetum palustre</i>	Marsh Horsetail	G5	S2			Willow/alder thickets, swampy woods, streambanks
<i>Equisetum pratense</i>	Meadow Horsetail	G5	S2			Moist woodlands, shady streambanks
<i>Equisetum sylvaticum</i>	Wood Horsetail	G5	S2			Moist aspen or lowland woods, seeps
<i>Equisetum variegatum</i>	Variiegated Horsetail	G5	S1			Marl pools of calcareous fens
<i>Erigeron divergens</i>	Spreading Fleabane	G5	S1		W	Dry, open, rocky, sandy, loose soils
<i>Erigeron radicans</i>	Cushion Fleabane	G3G4	S1		W	Exposed hills, slopes, ridges
<i>Eriogonum cernuum</i>	Nodding Buckwheat	G5	S1		S	Erosional breaks in sandy grasslands, sandstone colluvium
<i>Eriogonum visherii</i>	Dakota Buckwheat	G3	S2		S	Barren, erodible, rock outcrops in badland habitat
<i>Eriophorum chamissonis</i>	Chamisson's Cottongrass	G5	S2			Bogs, marshes, peaty fens

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<i>Eriophorum gracile</i>	Slender Cottongrass	G5	S1			Seepage fens
<i>Eriophorum viridicarinatum</i>	Green Keeled Cottongrass	G5	S1			Sphagnum bogs, peaty fens
<i>Escobaria missouriensis</i>	Missouri Foxtail Cactus	G5	SU		S	Plains, hills, desert edge, grasslands, lower mountains
<i>Euonymus atropurpureus</i>	Wahoo	G5	S2			Rich deciduous woods, woodland edges, river banks
<i>Euphorbia robusta</i>	Rocky Mountain Spurge	G5	S3			Dry, sandy or gravelly prairie slopes
<i>Fraxinus nigra</i>	Black Ash	G5	S2			Swampy or wet lowlands
<i>Fritillaria pudica</i>	Yellow Fritillary	G5	SU			Ephemerally moist areas of buttes
<i>Galium labradoricum</i>	Bog Bedstraw	G5	S3			Wetland thickets, fens, swampy woods
<i>Gentianopsis crinita</i>	Fringed Gentian	G5	S1			Low wet prairies, stream banks
<i>Geranium maculatum</i>	Wild Geranium	G5	SH			Rich, eastern deciduous woods
<i>Geum rivale</i>	Water Avens	G5	SU			Marshes, wet meadows, riverbanks
<i>Gymnocarpium dryopteris</i>	Oakfern	G5	S1			North-facing or shady wooded slopes
<i>Halenia deflexa</i>	Spurred Gentian	G5	S2			Wetland thickets, damp shady woods
<i>Helianthemum bicknellii</i>	Bicknell's Sunrose	G5	S1			Open woods, prairies, usually dry sandy soil
<i>Hudsonia tomentosa</i>	Woolly Beach-heather	G5	S1			Sand prairies, dunes
<i>Iris missouriensis</i>	Rocky Mountain Iris	G5	S2			Mesic areas within mixed grass prairie
<i>Juncus brevicaudatus</i>	Short-tailed Rush	G5	S2			Wet meadows, fens, marshes
<i>Juncus vaseyi</i>	Vasey's Rush	G5?	SU			Wet meadows, shores
<i>Lappula cenchrusoides</i>	Stickseed	G4	S1			Dry soils in open areas
<i>Lechea stricta</i>	Upright Pinweed	G4?	S1			Dry, sandy woods and prairies
<i>Leersia virginica</i>	Whitegrass	G5	SU			Moist woods, stream banks
<i>Leucocrinum montanum</i>	Sand Lily	G5	S2		S	Grass/sagebrush prairies, open conifer woodlands, sandy soils
<i>Linnaea borealis</i>	Twinflower	G5	S4			Moist, wooded, north-facing slopes

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<i>Liparis loeselii</i>	Loesel's Twayblade	G5	S2			Damp woods, prairie swales, fens
<i>Lipocarpha micrantha</i>	Small-flowered Lipocarpha	G5	S1			Wet sandy areas, sandbars
<i>Mahonia repens</i>	Creeping Barberry	G5	S2			Coulees, slopes of high plains
<i>Mentzelia pumila</i>	Dwarf Mentzelia	G4	S1		S	Dry sandy or clayey soils
<i>Menyanthes trifoliata</i>	Buckbean	G5	S3			Sphagnum bogs, fen peat lands
<i>Mimulus guttatus</i>	Yellow Monkeyflower	G5	S1			Marshes, along streams and lake shores
<i>Minuartia dawsonensis</i>	Stiff Sandwort	G5	S1			Open rocky or gravelly areas on shale
<i>Mitella nuda</i>	Naked Mitrewort	G5	S3			Swampy lowland woods and thickets
<i>Monotropa uniflora</i>	Indianpipe	G5	S3			Rich shady woods
<i>Muhlenbergia filiformis</i>	Pull-up Muhly	G5	S1			Marl pools of calcareous fens
<i>Myosurus apetalus var. montanus</i>	Bristly Mousetail	G5T3 T5	SU		W	Moist areas, vernal pools, lowlands
<i>Myosurus aristatus</i>	Sedge Mousetail	G5	S2			Moist areas, vernal wetlands of mixed grass prairies
<i>Myriophyllum pinnatum</i>	Cutleaf Watermilfoil	G5	S2			Shallows of marshes and shores
<i>Najas guadalupensis</i>	Southern Naiad	G5	S1			Lakes or streams
<i>Najas marina</i>	Spiny Naiad	G5	S1			Alkaline lakes, ponds
<i>Oenothera laciniata</i>	Cutleaf Evening Primrose	G5	S?		W	Sandy prairie, disturbed pastures, roadsides, stream valleys
<i>Oenothera rhombipetala</i>	Rhombic Evening Primrose	G4G5	S?			Sandy prairies
<i>Onoclea sensibilis</i>	Sensitive Fern	G5	S2			Wetland thickets, fen peat lands, damp, shady woodlands
<i>Ophioglossum pusillum</i>	Adder's-Tongue Fern	G5	S2			Low prairie swales
<i>Orobanche ludoviciana, ssp. multiflora</i>	Manyflowered Broomrape	G5T5	S?		W	Dry sandy soils, dunes, gypsum ridges
<i>Orobanche uniflora</i>	One-flowered Broomrape	G5	S?			Damp woods, thickets

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NORTH DAKOTA'S PLANT SPECIES OF CONCERN

<u>Scientific Name</u>	<u>Common Name</u>	<u>Global</u>	<u>State</u>	<u>USFWS</u>	<u>USFS</u>	<u>Habitat</u>
<i>Oxytropis deflexa</i>	Drooping Locoweed	G5	S1			Sandy lake shores, low meadows, aspen woodland clearings
<i>Oxytropis sericea</i>	White Locoweed	G5T5	S?		W	Mixed grass prairie on slopes or buttes
<i>Parnassia palustris var. parviflora</i>	Small-flowered Grass-of-Parnassus	G5T4	SU			Calcareous fens, bogs
<i>Pellaea glabella</i>	Smooth Cliffbrake	G5	S4			Sandstone caprock of buttes and ledges
<i>Penstemon procerus</i>	Small-flowered Penstemon	G5	S1			Northern prairie slopes
<i>Petasites frigidus</i>	Sweet Coltsfoot	G5	S2			Damp meadows, woods
<i>Phlox alyssifolia</i>	Alyssum-leaved Phlox	G5	S1		S	Sandy/gravelly soil of open prairies, clay banks, limestone ridges
<i>Phlox pilosa</i>	Downy Phlox	G5	SU			Mesic prairies of open woodlands
<i>Pinus flexilis</i>	Limber Pine	G4	S1		S	Arid, exposed rocky ridges, foothills
<i>Piptatherum pungens</i>	Slender Mountain-Ricegrass	G5	S1			Xeric slopes, usually shale
<i>Platanthera clavellata</i>	Green Woodland Orchid	G5	SH			Swampy woods, bogs
<i>Platanthera praeclara</i>	Western Prairie Fringed Orchid	G3	S2	T		Moist prairie swales of sand hills
<i>Pogonia ophioglossoides</i>	Rose pogonia	G5	S1			Swampy woods, bogs
<i>Polygonum hydropiperoides</i>	Swamp Smartweed	G5	S1			Rooted in or near water
<i>Polygonum leptocarpum</i>	Thin-fruited Knotweed	G2G4Q	S1			Damp, dry soils on clay
<i>Polygonum punctatum</i>	Dotted Smartweed	G5	S2			Swampy thickets, wet meadows, riverbanks
<i>Polygonum sagittatum</i>	Arrow-leaved Tearthumb	G5	SH			Marshes, wet meadows
<i>Populus x acuminata</i>	Lanceleaf Cottonwood	GNA	S2		S	Floodplains, stream banks
<i>Populus x jackii</i>	Balm-of-Gilead	GNA	SU		W	Uplands and bottomlands
<i>Potamogeton diversifolius</i>	Water-thread Pondweed	G5	S2		W	Shallow ponds, marshes
<i>Potamogeton filiformis</i>	Slender Pondweed	G5	S2			Shallow lakes, ponds, streams

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<i>Potamogeton natans</i>	Floating Pondweed	G5	S2			Cold, shallow to deep lakes and streams
<i>Potamogeton praelongus</i>	White-stemmed Pondweed	G5	S1			Usually cool, deep water of lakes
<i>Potamogeton strictifolius</i>	Narrow-leaved Pondweed	G5	S1			Shallow lakes, streams
<i>Potamogeton vaginatus</i> (<i>Stuckenia vaginata</i>)	Sheathed Pondweed	G5	S3			Usually deep cold lakes, ponds
<i>Potentilla diversifolia</i>	Mountain meadow cinquefoil (Varileaf Potentilla)	G5	S1		W	Drainages, meadows
<i>Potentilla palustris</i>	Purple Cinquefoil	G5	S2			Fens, wet meadows, bogs
<i>Potentilla tridentata</i> (<i>Sibbaldiopsis tridentata</i>)	Three-toothed Cinquefoil (Shrubby Fivefingers)	G5	S1		W	Gravel shores, dry shale outcrops of prairie hillsides, scoria
<i>Primula incana</i>	American Primrose	G4G5	S1			Alkali wet meadows, fens
<i>Psoralea tenuiflora</i>	Slim-flowered Scurfpea	G5	SH			Dry prairie, high plains
<i>Ranunculus cardiophyllus</i>	Heart-leaved Buttercup	G4G5	S1		W	Mountain meadows along streams, seeps
<i>Ranunculus flammula</i>	Acrid Spearwort	G5	S1			Marshes, damp shores
<i>Ranunculus recurvatus</i>	Hooked crowfoot	G5	S1			Wooded ravines, swampy woods
<i>Rhynchospora capillacea</i>	Hair Beakrush	G4	S2			Moist calcareous fens, marsh meadows, seeps, limestone
<i>Ribes cynosbati</i>	Prickly Gooseberry	G5	S3			Moist rich woods
<i>Rorippa calycina</i>	Hayden's Yellowcress	G3	SH		W	Sandy shores of rivers and streams
<i>Salix maccalliana</i>	Swamp Willow	G5?	S1			Bogs, swamps
<i>Salix pedicellaris</i>	Bog Willow	G5	S3			Sphagnum bogs, fens
<i>Sanicula gregaria</i>	Cluster Sanicle	G4Q	SH			Rich, moist woodlands
<i>Scheuchzeria palustris</i>	Scheuchzeria	G5	S1			Sphagnum bogs,
<i>Scirpus cyperinus</i>	Cottongrass Bulrush	G5	S?			Wet meadows, fresh marshes, boggy areas, fen wetlands

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<i>Selaginella rupestris</i>	Ledge Spike-moss	G5	S1			Sandy soils near oak woodlands
<i>Senecio eremophilus</i>	Northern Ragwort	G5	S2			Open sites in aspen woodlands
<i>Smilax ecirrhata</i>	Upright Greenbrier (Upright Carrionflower)	G5?	S1		W	Rich deciduous woods and thickets
<i>Solidago flexicaulis</i>	Zigzag Goldenrod	G5	S1			Rich deciduous woodlands
<i>Solidago riddellii</i>	Riddell's Goldenrod	G5	SH			Low prairies, wet meadows
<i>Sphagnum recurvum</i>	Recurved Sphagnum	G5	S?			Bogs, fens, forests, near wetlands
<i>Sphagnum teres</i>	Round-leaved Sphagnum	G5	S?			Bogs, fens, forests, near wetlands
<i>Spiranthes cernua</i>	Nodding Ladies' Tresses	G5	S1			Fens, low prairies
<i>Spiranthes romanzoffiana</i>	Hooded Ladies' Tresses	G5	S1			Fens, wet meadows
<i>Sporobolus airoides</i>	Alkali Sacaton	G5	S2		S	Sandy/gravelly soil, clay outwash, saline conditions
<i>Stephanomeria minor (tenuifolia)</i>	Narrow-leaved Wirelettuce	G5	SU			Dry, clay outcrops
<i>Talinum parviflorum (Phemeranthus parviflorus)</i>	Prairie Flameflower	G5	S2		W	Sandy acidic soil, overlying bedrock
<i>Thelesperma subnudum var. marginatum</i>	Greenthread	G5T5	S2			Sandy prairie, open plains
<i>Thelypteris palustris</i>	Marsh Fern	G5	S3			Wetland thickets, shrubby fens
<i>Townsendia exscapa</i>	Easter Daisy	G5	SU		S	Dry barren plain, hillsides on gravelly exposures, weathered bedrock
<i>Townsendia hookeri</i>	Hooker's Townsendia	G5	S1		S	Butte summits
<i>Triantha glutinosa</i>	Sticky False-asphodel	G5	S1			Fens, wet meadows
<i>Triplasis purpurea</i>	Purple Sandgrass	G4G5	S1			Sandy prairies, blowouts
<i>Utricularia intermedia</i>	Flat-leaved Bladderwort	G5	S2			Calcareous fens, seepage peatlands

TABLE 4.D.1.A						
NORTH DAKOTA'S PLANT SPECIES OF CONCERN						
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<i>Utricularia minor</i>	Lesser Bladderwort	G5	S2			Calcareous fens, seeps
<i>Uvularia sessilifolia</i>	Sessile-leaved Bellwort	G5	S1			Rich deciduous woods
<i>Veronicastrum virginicum</i>	Culver's Root	G4	SH			Low prairie, rich woods
<i>Viola conspersa</i> (<i>Viola labradorica</i>)	Bog Violet	G5	S2			Moist woods, streambanks
<i>Viola incognita</i> (<i>Viola blanda</i>)	Large-leaved White Violet	G4G5T 4T5	SH			Moist woods
<i>Wolffia columbiana</i>	Southern Watermeal	G5	S2			Aquatic in quiet waters
* Data provided by the USFWS, USFS, ND Game & Fish Dept., North Dakota Natural Heritage Program, and NatureServe.						

TABLE 4.D.1.B	
USDA FOREST SERVICE SENSITIVE PLANTS LITTLE MISSOURI NATIONAL GRASSLAND	
Common Name	Scientific Name
Smooth Goosefoot	<i>Chenopodium subglabrum</i>
Blue Lips	<i>Collinsia parviflora</i>
Torrey's Cryptantha	<i>Cryptantha torreyana</i>
Nodding Buckwheat	<i>Eriogonum cernuum</i>
Dakota Buckwheat	<i>Eriogonum visheri</i>
Missouri Foxtail Cactus	<i>Escobaria missouriensis</i>
Sand Lily	<i>Leucocrinum montanum</i>
dwarf mentzelia	<i>Mentzelia pumila</i>
alyssumleaf phlox	<i>Phlox alyssifolia</i>
limber pine	<i>Pinus flexilis</i>
lanceleaf cottonwood	<i>Populus x acuminata</i>
alkali sacaton	<i>Sporobolus airoides</i>
Easter Daisy	<i>Townsendia exscapa</i>
Hooker's Townsend daisy	<i>Townsendia hookeri</i>

TABLE 4.D.1.C	
BLM SENSITIVE SPECIES – PLANTS	
Common Name	Scientific Name
Cusick's horse-mint	<i>Agastache cusickii</i>
Western boneset	<i>Ageratina occidentalis = Eupatorium occidentale</i>
Tapertip onion	<i>Allium acuminatum</i>
Sitka columbine	<i>Aquilegia formosa</i>
Daggett rock cress	<i>Arabis demissa var. languida</i>
sapphire rockcress	<i>Arabis fecunda</i>
narrowleaf milkweed	<i>Asclepias stenophylla</i>
Sweetwater milkvetch	<i>Astragalus aretioides = Orophaca aretioides</i>
Barr's milkvetch	<i>Astragalus barrii</i>
painted milkvetch	<i>Astragalus ceramicus var. apus</i>
lesser rushy milkvetch	<i>Astragalus convallarius var. convallarius = A. junciformis</i>
Geyer's milkvetch	<i>Astragalus geyeri</i>
Gray's milkvetch	<i>Astragalus grayi</i>
Wind River milkvetch	<i>Astragalus oreganus</i>
Bitterroot milkvetch	<i>Astragalus scaphoides</i>
railhead milkvetch	<i>Astragalus terminalis</i>
large-leafed balsamroot	<i>Balsamorhiza macrophylla</i>
Peculiar moonwort	<i>Botrychium paradoxum</i>
low northern-rockcress	<i>Braya humilis</i>
Mohave brickellbush	<i>Brickellia oblongifolia</i>
Idaho sedge	<i>C. idahoa = C. parryana ssp. idahoa</i>
Small-winged sedge	<i>Carex stenoptila</i>
obscure evening-primrose	<i>Camissonia andina = Oenothera andina</i>
small camissonia	<i>Camissonia parvula = Oenothera parvula</i>
Crawe's sedge	<i>Carex crawei</i>

TABLE 4.D.1.C	
BLM SENSITIVE SPECIES – PLANTS	
Common Name	Scientific Name
annual Indian paintbrush	<i>Castilleja exilis</i>
yellow bee plant	<i>Cleome lutea</i>
Fendler cat's-eye	<i>Cryptantha fendleri</i>
miner's candle	<i>Cryptantha scoparia</i>
Schweinitz' flatsedge	<i>Cyperus schweinitzii</i>
Scribner's panic grass	<i>Dichanthelium oligosanthes</i> <i>var.scribnerianum</i>
beavertip draba	<i>Draba globosa</i> = <i>D. apiculata</i>
Wind River draba	<i>Draba ventosa</i>
long sheath waterweed	<i>Elodea bifoliata</i> = <i>E.longivaginata</i>
beaked spikerush	<i>Eleocharis rostellata</i>
Idaho fleabane	<i>Erigeron asperugineus</i>
linearleaf fleabane	<i>Erigeron linearis</i>
buff fleabane	<i>Erigeron ochroleucus</i> var.
matted buckwheat	<i>Eriogonum caespitosum</i>
Railroad Canyon wild buckwheat	<i>Eriogonum soliceps</i>
Visher's buckwheat	<i>Eriogonum visheri</i>
hiker's gentian	<i>Gentianopsis simplex</i>
spiny hopsage	<i>Grayia spinosa</i>
Howell's gumweed	<i>Grindelia howellii</i>
showy goldeneye	<i>Heliomeris multiflora</i> var. <i>multiflora</i> = <i>Viguiera multiflora</i>
prostrate hutchensia	<i>Hutchinsia procumbens</i>
ballhead ipomopsis	<i>Ipomopsis congesta</i> ssp. <i>crebrifolia</i>
simple bog sedge	<i>Kobresia simpliciuscula</i>
green molly	<i>Kochia americana</i>
mat prickly phlox	<i>Leptodactylon caespitosum</i>

TABLE 4.D.1.C	
BLM SENSITIVE SPECIES – PLANTS	
Common Name	Scientific Name
Idaho bladderpod (same as keeled)	<i>Lesquerella carinata var. languida</i>
Pryor Mountain bladderpod	<i>Lesquerella lesicii</i>
beautiful bladderpod	<i>Lesquerella pulchella</i>
sand wildrye	<i>Leymus flavescens = Elymus flavescens</i>
Pale-spiked lobelia	<i>Lobelia spicata</i>
taper-tip desert-parsley	<i>Lomatium attenuatum</i>
Nuttall desert-parsley	<i>Lomatium nuttallii</i>
marsh felwort	<i>Lomatogonium rotatum</i>
Torrey's desert dandelion	<i>Malacothrix torreyi = M. sonchoides v. torreyi</i>
bractless mentzelia	<i>Mentzelia nuda</i>
dwarf mentzelia	<i>Mentzelia pumila</i>
dwarf purple monkeyflower	<i>Mimulus nanus</i>
primrose monkeyflower	<i>Mimulus primuloides</i>
square-stem monkeyflower	<i>Mimulus ringens</i>
leafy nama	<i>Nama densum</i>
Blue toadflax	<i>Nuttallanthus texanus</i>
meadow lousewort	<i>Pedicularis crenulata</i>
narrowleaf penstemon	<i>Penstemon angustifolius</i>
Lemhi beardtongue	<i>Penstemon lemhiensis</i>
Whipple's beardtongue	<i>Penstemon whippleanus</i>
hoary phacelia	<i>Phacelia incana</i>
Hot Spring phacelia	<i>Phacelia thermalis</i>
plains phlox	<i>Phlox andicola</i>
Missoula phlox	<i>Phlox missoulensis</i>
double bladderpod	<i>Physaria brassicoides</i>

TABLE 4.D.1.C	
BLM SENSITIVE SPECIES – PLANTS	
Common Name	Scientific Name
common twinpod	<i>Physaria didymocarpa v. lanata</i>
slender-branched popcorn flower	<i>Plagiobothrys leptocladus</i>
short-leaved bluegrass	<i>Poa arnowiae = P. curta</i>
Austin's knotweed	<i>Polygonum douglasii sp. Austinae</i>
Platte cinquefoil	<i>Potentilla plattensis</i>
alkali primrose	<i>Primula alcalina</i>
mealy primrose	<i>Primula incana</i>
James stitchwort	<i>Pseudostellaria jamesiana = Stellaria jamesiana</i>
dwarf wooly-heads	<i>Psilocarphus brevissimus</i>
Indian breadroot	<i>Pediomelum hypogaeum</i>
Lemmon's alkaligrass	<i>Puccinellia lemmonii</i>
white-veined wintergreen	<i>Pyrola picta</i>
Beartooth large-flowered goldenweed	<i>Pyrrcoma carthamoides var. subsquarrosa = Haplopappus carthamoides v. subsquarrosus</i>
bur oak	<i>Quercus macrocarpa</i>
Northern buttercup	<i>Ranunculus pedatifidus</i>
persistent-sepal yellow-cress	<i>Rorippa calycina</i>
slender bulrush	<i>Schoenoplectus heterochaetus = Scirpus heterochaetus</i>
shoshonea	<i>Shoshonea pulvinata</i>
few-flowered goldenrod	<i>Solidago velutina = S. sparsifolia</i>
white-stemmed globe-mallow	<i>Sphaeralcea munroana</i>
silver chicken sage	<i>Sphaeromeria argentea</i>
smooth buckwheat	<i>Stenogonum salsuginosum = Eriogonum salsuginosum</i>
thorn skeletonweed	<i>Stephanomeria spinosa = Lygodesmia spinosa</i>

TABLE 4.D.1.C	
BLM SENSITIVE SPECIES – PLANTS	
Common Name	Scientific Name
Poison suckleya	<i>Suckleya suckleyana</i>
Rocky Mountain dandelion	<i>Taraxacum eriophorum</i>
alpinemeadowrue	<i>Thalictrum alpinum</i>
arrow thelypody	<i>Thelypodium sagittatum ssp.sagittatum</i>
meadow pennycress	<i>Thlaspi parviflorum</i>
showy townsendia	<i>Townsendia florifera</i>
Nannyberry	<i>Viburnum lentago</i>

APPENDIX 4.D.2

North Dakota Federal and State Wildlife Species of Concern

TABLE 4.D.2.A							
NORTH DAKOTA'S BIRD SPECIES OF CONCERN							
Scientific Name	Common Name	Global	State	USFWS	USFS	CWCS	Habitat
<i>Ammodramus bairdii</i>	Baird's Sparrow	G4	SU		S	I	Native prairies & grasslands
<i>Ammodramus leconteii</i>	Le Conte's Sparrow	G4	SU			II	Fens, wet meadows, marshes, sedges
<i>Ammodramus nelsoni</i>	Nelson's Sharp-tailed Sparrow	G5	SU			I	Fens, shallow marshes, lakes
<i>Ammodramus savannarum</i>	Grasshopper Sparrow	G5	SU			I	Mixed-grass prairie, meadows, hayfields
<i>Anas acuta</i>	Northern Pintail	G5	SU			II	Aquatic/wetland habitat
<i>Anthus spragueii</i>	Sprague's Pipit	G4	S3		S	I	Grazed prairie
<i>Asio flammeus</i>	Short-eared Owl	G5	SU			II	Prairie, hayfields, stubble fields
<i>Athene cunicularia</i>	Burrowing Owl	G4	SU		S	II	Grasslands with abandoned burrows
<i>Aythya americana</i>	Redhead	G5	SU			II	Aquatic/wetland habitat
<i>Aythya valisineria</i>	Canvasback	G5	SU			II	Aquatic/wetland habitat
<i>Bartramia longicauda</i>	Upland Sandpiper	G5	SU			I	Dry, open mixed-grass prairie
<i>Botaurus lentiginosus</i>	American Bittern	G4	SU			I	Aquatic/wetland habitat
<i>Buteo regalis</i>	Ferruginous Hawk	G4	SU			I	Native prairie, trees, cliffs
<i>Buteo swainsoni</i>	Swainson's Hawk	G5	SU			I	Open plains and prairies
<i>Calamospiza melanocorys</i>	Lark Bunting	G5	SU			I	Sagebrush, sage prairie
<i>Calcarius mccownii</i>	McCown's Longspur	G4	S2			III	Arid, grazed, mix-grass prairie,
<i>Calcarius ornatus</i>	Chestnut-collared Longspur	G5	SU			I	Grazed/hayed mixed-grass prairie
<i>Catoptrophorus semipalmatus</i>	Willet	G5	SU			I	Aquatic/wetland habitat
<i>Centrocercus urophasianus</i>	Greater Sage Grouse	G4	SU		S	II	Sagebrush
<i>Charadrius montanus</i>	Mountain Plover	G3	SX	PT			Dry short grass prairie, sagebrush
<i>Chlidonias niger</i>	Black Tern	G4	SU			I	Aquatic/wetland habitat

TABLE 4.D.2.A							
NORTH DAKOTA'S BIRD SPECIES OF CONCERN							
Scientific Name	Common Name	Global	State	USFWS	USFS	CWCS	Habitat
<i>Circus cyaneus</i>	Northern Harrier	G5	SU			II	Upland grasses near water
<i>Cistothorus platensis</i>	Sedge Wren	G5	SU			II	Wet meadows, tall grasses & sedges
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	G5	SU			I	Woodlands, thickets, prairie shrub, shelterbelt
<i>Coturnicops noveboracensis</i>	Yellow Rail	G4	S2			I	Aquatic/wetland habitats
<i>Dolichonyx oryzivorus</i>	Bobolink	G5	SU			II	Tall-grass prairie, hayland, cropland
<i>Falco mexicanus</i>	Prairie Falcon	G5	S3			II	Badlands, cliffs, buttes in west ND
<i>Falco peregrinus</i>	Peregrine Falcon	G4	SU		S	III	Undisturbed areas with cliffs and prey
<i>Grus americana</i>	Whooping Crane	G1	SX	E, XN		III	Aquatic/wetland habitats
<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S1			II	Forested areas near water
<i>Lanius ludovicianus</i>	Loggerhead Shrike	G4	SU		S	II	Open country, wooded coulees, shelterbelts
<i>Larus pipixcan</i>	Franklin's Gull	G4G5	S?B			I	Aquatic/wetland habitats
<i>Limosa fedoa</i>	Marbled Godwit	G5	SU			I	Aquatic/wetland habitat
<i>Melanerpes erythrocephalus</i>	Red-Headed Woodpecker	G5	SU			II	Trees by rivers, shelterbelts, wooded areas
<i>Numenius americanus</i>	Long-billed Curlew	G5	S2		S	I	Aquatic/wetland habitats, extreme SW counties
<i>Numenius borealis</i>	Eskimo Curlew	GH	S?	E			Wetlands, grasslands, pastures
<i>Pelecanus erythrorhynchos</i>	American White Pelican	G4	SU			I	Aquatic/wetland habitat
<i>Phalaropus tricolor</i>	Wilson's Phalarope	G5	SU			I	Aquatic/wetland habitat
<i>Podiceps auritus</i>	Horned Grebe	G5	SU			I	Aquatic/wetland habitat
<i>Recurvirostra americana</i>	American Avocet	G5	SU			II	Aquatic/wetland habitat
<i>Spiza americana</i>	Dickcissel	G5	SU			II	Alfalfa, sweet clover, brushy grasslands

TABLE 4.D.2.A							
NORTH DAKOTA'S BIRD SPECIES OF CONCERN							
Scientific Name	Common Name	Global	State	USFWS	USFS	CWCS	Habitat
<i>Spizella breweri</i>	Brewer's Sparrow	G5	S3			III	Dense sagebrush, short-grass prairie
<i>Sterna antillarum</i>	Interior Least Tern	G4T2Q	SU	E		II	Sparsely vegetated sand bars
<i>Tympanuchus cupido pinnatus</i>	Greater Prairie Chicken	G4T4	S2		S	II	Native tall-grass prairie
<i>Tympanuchus phasianellus</i>	Sharp-tailed Grouse	G5	SU			II	Mixed-grass prairie, patches of woody vegetation
<i>Zonotrichia albicollis</i>	White-throated Sparrow	G5	S3				Mature quaking aspen, dense understory
* Data provided by the USFWS, USFS, ND Game & Fish Dept., North Dakota Natural Heritage Program, and NatureServe.							

TABLE 4.D.2.B							
NORTH DAKOTA'S MAMMAL SPECIES OF CONCERN							
Scientific Name	Common Name	Global	State	USFWS	USFS	CWCS	Habitat
<i>Canis lupus</i>	Gray Wolf	G4G5	SX	E		III	Forested areas
<i>Chaetodipus hispidus</i>	Hispid Pocket Mouse	G5	S4			III	Short and mixed-grass prairie
<i>Cynomys ludovicianus</i>	Black-tailed Prairie Dog	G4	SU		S	I	Short grass of grazed rangeland in SW North Dakota
<i>Lemmyscus curtatus</i>	Sagebrush Vole	G5	S4			III	Extreme western North Dakota
<i>Lutra canadensis</i>	Northern River Otter	G5	S1			II	Rivers, streams near wooded areas
<i>Mustela nigripes</i>	Black-footed Ferret	G1	S1	E		II	Short grass prairie where prairie dog towns occur.
<i>Myotis ciliolabrum</i>	Western Small-footed Myotis	G5	SU			III	Extreme western North Dakota
<i>Myotis evotis</i>	Long-eared Myotis	G5	SU			III	Western North Dakota
<i>Myotis volans</i>	Long-legged Myotis	G5	SU			III	Western North Dakota
<i>Ovis canadensis</i>	Bighorn Sheep	G4T4	S2		S		Rugged terrain, rocky slopes, badlands
<i>Perognathus flavescens</i>	Plains Pocket Mouse	G5	SU			III	Sandy areas covered with grass in SE North Dakota
<i>Sorex arcticus</i>	Arctic Shrew	G5	S?			III	Moist, grassy openings in forested areas
<i>Sorex hoyi</i>	American Pygmy Shrew	G5	SU			II	Forested areas in drift prairie & Red River Valley
<i>Spermophilus richardsonii</i>	Richardson's Ground Squirrel	G5	SU			II	Open grasslands, cultivated fields, pastures
<i>Spilogale putoris</i>	Eastern Spotted Skunk	G4	S1			III	Riparian woodlands, densely vegetated
<i>Vulpes velox</i>	Swift Fox	G3	S1			II	Short mixed-grass prairie tracts
* Data provided by the USFWS, USFS, ND Game & Fish Dept., North Dakota Natural Heritage Program, and NatureServe.							

TABLE 4.D.2.C							
NORTH DAKOTA'S REPTILE SPECIES OF CONCERN							
Scientific Name	Common Name	Global	State	USFWS	USFS	CWCS	Habitat
<i>Apalone mutica</i>	Smooth Softshell Turtle	G5	SU			III	Lower Missouri River System
<i>Chelydra serpentina</i>	Common Snapping Turtle	G5	S?			II	Warm water lakes/streams, muddy bottoms
<i>Eumeces septentrionalis</i>	Northern Prairie Skink	G5	S2S3			III	Sandy areas in grasslands
<i>Graptemys pseudogeographica</i>	False Map Turtle	G5	SU			III	Lower Missouri River System
<i>Heterodon nasicus</i>	Western Hognose Snake	G5	S?			I	Sand/gravel habitats near rivers
<i>Liochlorophis vernalis</i>	Smooth Green Snake	G5	SU			I	Grasslands, uplands of hills
<i>Phrynosoma hernandesi</i>	Short-Horned Lizard	G5	SU			II	Badlands
<i>Sceloporus graciosus</i>	Northern Sagebrush Lizard	G5T5	S4			III	Sagebrush, open flats, forested slopes near water
<i>Storeria occipitomaculata</i>	Redbelly Snake	G5	SU			II	Woodlands in drift prairie, Red River Valley
* Data provided by the USFWS, USFS, ND Game & Fish Dept., North Dakota Natural Heritage Program, and NatureServe.							

TABLE 4.D.2.D							
NORTH DAKOTA'S AMPHIBIAN SPECIES OF CONCERN							
Scientific Name	Common Name	Global	State	USFWS	USFS	CWCS	Habitat
<i>Bufo hemiophrys</i>	Canadian Toad	G4	SU			I	Aquatic/wetland habitat
<i>Rana pipiens</i>	Northern Leopard Frog	G5	SU				Aquatic/wetland habitat
<i>Spea bombifrons</i>	Plains Spadefoot Toad	G5	SU			I	Dry grasslands, loose soils, shallow pools
* Data provided by the USFWS, USFS, ND Game & Fish Dept., North Dakota Natural Heritage Program, and NatureServe.							

TABLE 4.D.2.E
NORTH DAKOTA'S FISH SPECIES OF CONCERN

Scientific Name	Common Name	Global	State	USFWS	USFS	CWCS	Habitat
<i>Ameiurus natalis</i>	Yellow Bullhead	G5	SU			III	Backwater, slow-moving sections of rivers, soft bottoms
<i>Campostoma anomalum</i>	Central Stoneroller	G5	S3			III	Forest River in NE North Dakota
<i>Cycleptus elongatus</i>	Blue Sucker	G3G4	S3			I	Large rivers, strong current, high turbidity
<i>Ichthyomyzon castaneus</i>	Chestnut Lamprey	G4	SU			III	Red River
<i>Ichthyomyzon unicuspis</i>	Silver Lamprey	G5	SU			III	Red River
<i>Macrhybopsis gelida</i>	Sturgeon Chub	G3	S2		S2	I	Rocky rapids, high turbidity, swift currents
<i>Macrhybopsis meeki</i>	Sicklefin Chub	G3	S2			I	Deep rivers, swift current, muddy waters
<i>Macrhybopsis storeriana</i>	Silver Chub	G5	S?			II	Deeper pools, sandy backwater, large rivers
<i>Margariscus nachtriebi</i>	Northern Pearl Dace	G5	S3			I	Missouri & Red River systems
<i>Nocomis biguttatus</i>	Hornyhead Chub	G5	S3			III	Forest River in NE North Dakota
<i>Notropis anogenus</i>	Pugnose Shiner	G3	S1			III	Clear water with vegetation
<i>Notropis heterolepis</i>	Blacknose Shiner	G5	S3			III	Pools with vegetation
<i>Notropis rubellus</i>	Rosyface Shiner	G5	S3			III	Pools with current
<i>Percina caprodes</i>	Logperch	G5	S3			III	Red River
<i>Percina shumardi</i>	River Darter	G5	SU			III	Red River
<i>Percopsis omiscomaycus</i>	Trout-Perch	G5	S?			II	Deep pools, rivers, streams, sandy bottoms
<i>Phoxinus eos</i>	Northern Redbelly Dace	G5	S4		S2	II	Slower rivers with some vegetation
<i>Phoxinus neogaeus</i>	Finescale Dace	G5	SU			III	Pools, slow moving waters
<i>Platygobio gracilis</i>	Flathead Chub	G5	S?			II	Turbid waters, swift current, sand/gravel bottoms
<i>Polyodon spathula</i>	Paddlefish	G4	S?			II	Large free flowing rivers with zooplankton
<i>Pylodictis olivaris</i>	Flathead Catfish	G5	S4			III	Pools, lakes, slower waters,
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	G2	S1	E		II	Large, turbid rivers with sand/gravel bottom

* Data provided by the USFWS, USFS, ND Game & Fish Dept., North Dakota Natural Heritage Program, and NatureServe.

TABLE 4.D.2.F							
NORTH DAKOTA'S INSECT SPECIES OF CONCERN							
Scientific Name	Common Name	Global	State	USFWS	USFS	CWCS	Habitat
<i>Atrytone arogos iowa</i>	Arogos Skipper	G3	SU		S		Native prairie with purple vetch, Canada thistle, purple coneflower
<i>Euphyes dion</i>	Dion Skipper	G4	S1		S		Sedge marshes, cattails, swamp milkweed
<i>Hesperia dacotae</i>	Dakota Skipper	G2	S2	C	S		Native tall grass prairie with white camass
<i>Hesperia ottoe</i>	Ottoe Skipper	G3G4	SU		S		Native prairie hilltops with coneflower
<i>Oarisma powesheik</i>	Powesheik Skipperling	G1	SU		S		Undisturbed, tall grass meadows
<i>Phyciodes batesii</i>	Tawny Crescent	G4	S3		S		Woodlands, native prairie with dogbane, leafy spurge
<i>Poanes massasoit</i>	Mulberry Wing	G4	S2		S		Sedge meadows with upright sedge, dogwood
<i>Poanes viator</i>	Broad-Winged Skipper	G5	S2		S		Tall marsh grass with hairy sedge, swamp milkweed
<i>Speyeria idalia</i>	Regal Fritillary	G3	S2		S		Tall grass areas, damp meadows with blazing star, milkweed, thistle
* Data provided by the USFWS, USFS, ND Game & Fish Dept., North Dakota Natural Heritage Program, and NatureServe.							

TABLE 4.D.2.G							
NORTH DAKOTA'S BIVALVE AND GASTROPOD SPECIES OF CONCERN							
Scientific Name	Common Name	Global	State	USFWS	USFS	CWCS	Habitat
<i>Amblema plicata</i>	Threeridge	G5	SU			II	Mud, sand, gravel bottoms
<i>Fusconaia flava</i>	Wabash Pigtoe	G5	S4			II	Mud, sand, gravel bottoms
<i>Lasmigona compressa</i>	Creek Heelsplitter	G5	SU			II	Sandy-bottomed headwaters
<i>Ligumia recta</i>	Black Sandshell	G4G5	S4			II	Swift current, gravel/sand bottoms
<i>Potamilus alatus</i>	Pink Heelsplitter	G5	S4			II	Mud, gravel bottoms
<i>Potamilus ohioensis</i>	Pink Papershell	G5	SU			III	Sandy bottom of Bois de Sioux River
<i>Quadrula quadrula</i>	Mapleleaf	G5	S3			II	Mud, sand, gravel bottoms
* Data provided by the USFWS, USFS, ND Game & Fish Dept., North Dakota Natural Heritage Program, and NatureServe.							

TABLE 4.D.2.H	
BLM SENSITIVE SPECIES – MAMMALS	
Common Name	Scientific Name
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>
Fisher	<i>Martes pennanti</i>
Fringed myotis	<i>Myotis thysanodes</i>
Fringe-tailed myotis	<i>Myotis thysanodes pahasapensis</i>
Gray Wolf	<i>Canis lupus</i>
Great Basin pocket mouse	<i>Perognathus parvus</i>
Grizzly Bear	<i>Ursus arctos horribilis</i>
Long-eared myotis	<i>Myotis evotis</i>
Long-legged myotis	<i>Myotis volans</i>
Meadow jumping mouse	<i>Zapus hudsonius</i>
North American wolverine	<i>Gulo gulo luscus</i>
Northern myotis	<i>Myotis septentrionalis</i>
Pallid bat	<i>Antrozous pallidus</i>
Pygmy rabbit	<i>Brachylagus idahoensis</i>
Swift fox	<i>Vulpes velox</i>
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>
White-tailed prairie dog	<i>Cynomys leucurus</i>

TABLE 4.D.2.I	
BLM SENSITIVE SPECIES – BIRDS	
Common Name	Scientific Name
Baird's sparrow	<i>Ammodramus bairdii</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Black tern	<i>Chilodonia niger</i>
Black-backed woodpecker	<i>Picoides arcticus</i>
Black-crowned night heron	<i>Nycticorax nycticorax</i>
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>
Bobolink	<i>Dolichonyx orysivorus</i>
Brewer's sparrow	<i>Spizella breweri</i>
Burrowing owl	<i>Athene cunicularia</i>
Chestnut-collared longspur	<i>Calcarius ornatus</i>
Common loon	<i>Gavia immer</i>
Dickcissel	<i>Spiza americana</i>
Ferruginous hawk	<i>Buteo regalis</i>
Flammulated owl	<i>Otus flammeolus</i>
Franklin's gull	<i>Larus pipixcan</i>
Golden eagle	<i>Aquila chrysaetos</i>
Great gray owl	<i>Strix nebulosa</i>
Greater sage-grouse	<i>Centrocercus urophasianus</i>
Harlequin duck	<i>Histrionicus histrionicus</i>
LeConte's sparrow	<i>Ammodramus leconteii</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Long-billed curlew	<i>Numenius americanus</i>
Marbled godwit	<i>Limosa fedoa</i>
McCown's longspur	<i>Calcarius mccownii</i>
Mountain plover	<i>Charadrius montanus</i>

TABLE 4.D.2.I	
BLM SENSITIVE SPECIES – BIRDS	
Common Name	Scientific Name
Nelson's sharp-tailed sparrow	<i>Ammodramus nelsoni</i>
Northern goshawk	<i>Accipiter gentiles</i>
Peregrine falcon	<i>Falco peregrinus</i>
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>
Sage sparrow	<i>Amphispiza belli</i>
Sage thrasher	<i>Oreoscoptes montanus</i>
Sedge wren	<i>Cistothorus platensis</i>
Sprague's pipit	<i>Anthus spragueii</i>
Swainson's hawk	<i>Buteo swainsoni</i>
Three-toed woodpecker	<i>Picoides tridactylus</i>
Trumpeter swan	<i>Cygnus buccinator</i>
White-faced ibis	<i>Plegadis chihi</i>
Yellow rail	<i>Coturnicops noveboracensis</i>
Yellow-billed cuckoo	<i>Coccyzus americanus</i>

TABLE 4.D.2.J	
BLM SENSITIVE SPECIES – FISH	
Common Name	Scientific Name
Arctic grayling (fluvial population)	<i>Thymallus arcticus montanus</i>
Northern redbelly X Finescale dace	<i>Phoxinus eos x Phoxinus neogaeus</i>
Paddlefish	<i>Polyodon spathula</i>
Pearl dace	<i>Margariscus margarita</i>
Sauger	<i>Stizostedion canadense</i>
Sturgeon chub	<i>Macrhybopsis gelida</i>
Westslope cutthroat trout	<i>Oncorhynchus clarki lewisi</i>
Yellowstone cutthroat trout	<i>Oncorhynchus clarki bouvieri</i>

TABLE 4.D.2.K	
BLM SENSITIVE SPECIES – REPTILES	
Common Name	Scientific Name
Greater short-horned lizard	<i>Phrynosoma hernandesi</i>
Milk snake	<i>Lampropeltis triangulum</i>
Snapping turtle	<i>Chelydra serpentina</i>
Spiny softshell	<i>Apalone spinifera</i>
Western hog-nosed snake	<i>Heterodon nasicus</i>

TABLE 4.D.2.L	
BLM SENSITIVE SPECIES – AMPHIBIANS	
Common Name	Scientific Name
Coeur d'Alene salamander	<i>Plethodon idahoensis</i>
Great Plains toad	<i>Bufo cognatus</i>
Northern leopard frog	<i>Rana pipiens</i>
Plains spadefoot	<i>Spea bombifrons</i>
Western toad	<i>Bufo boreas</i>

TABLE 4.D.2.M	
BLM SENSITIVE SPECIES – INSECTS	
Common Name	Scientific Name
Dakota skipper	<i>Hesperia dactotae</i>

APPENDIX 4.D.3

North Dakota Federal and State Threatened and Endangered Botany and Wildlife Species Rank Definitions

TABLE 4.D.3.A	
NATURAL HERITAGE RANK DEFINITIONS	
G1	Critically Imperiled – Critically imperiled globally because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction. Typically 5 or fewer occurrences or very few remaining individuals (<1,000) or acres (<2,000) or stream miles (<10). [Critically endangered throughout its range.]
G2	Imperiled - Imperiled globally because of rarity or because of other factors demonstrably making it very vulnerable to extinction or elimination throughout its range. Typically 6 to 20 occurrences or few remaining individuals (1,000 to 3,000) or acres (2,000 to 10,000) or stream miles (10 to 50). [Endangered throughout its range.]
G3	Vulnerable – Vulnerable globally either because very rare and local throughout its range, found only in a restricted range (even if abundant at some locations) or because of other factors making it vulnerable to extinction or elimination throughout its range. Typically of 21 to 100 occurrences or between 3,000 and 10,000 individuals. [Threatened throughout its range.]
G4	Apparently Secure – Uncommon but not rare (although it may be quite rare in parts of its range, especially at the periphery), and usually widespread. Apparently not vulnerable in most of its range, but possibly cause for long-term concern. Typically more than 100 occurrences and more than 10,000 individuals.
G5	Secure – Common, widespread, and abundant (although it may be quite rare in parts of its range, especially on the periphery). Not vulnerable in most of its range. Typically with considerably more than 100 occurrences and more than 10,000 individuals.
GX	Presumed Extinct (species elements) - Believed to be extinct throughout its range (e.g., passenger pigeon), virtually no likelihood that it will be rediscovered.
GH	Possibly Extinct (species elements) - Of historical occurrence throughout its range, i.e., formerly part of the established biota, with the expectation that it may be rediscovered (e.g. Ivory-billed woodpecker).
G#G#	Range Rank - A numeric range rank (e.g., G2G3) is used to indicate uncertainty about the exact status of a taxon. Ranges cannot skip more than one rank (e.g., GU should be used rather than G1G4).
GU	Unrankable - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends
G?	Unranked - Global rank not yet assessed.
HYB	Hybrid - Element not ranked because it represents and interspecific hybrid and not a species.
?	Inexact Numeric Rank - Denotes inexact numeric rank.
Q	Questionable Taxonomy - Taxonomic status is questionable; numeric rank may change with taxonomy.
C	Captive or Cultivated Only - Taxon at present is extant only in captivity or cultivation, or as a reintroduced population not yet established
T	Infraspecific Taxon (trinomial) – The status of infraspecific taxa (subspecies or varieties) are indicated by a “T-rank” following the species’ basic global rank. A T subrank cannot imply the subspecies or variety is more abundant than the species’ basic global rank (i.e., a G1T2 subrank should not occur).
S1	Critically Imperiled – Critically imperiled in the state because of extreme rarity or because of some factor of its biology making it especially vulnerable to extirpation from the state. Typically 5 or fewer occurrences or very few remaining individuals (<1,000). [Critically endangered in state.]
S2	Imperiled – Imperiled in the state because of rarity or because of other factors making it very vulnerable to extirpation from the state. Typically 6 to 20 occurrences or few remaining individuals (1,000 to 3,000). [Endangered in the state.]
S3	Vulnerable – Vulnerable in the state either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation. Typically 21 to 100 occurrences or between 3,000 to 10,000 individuals. [Threatened in the state.]
S4	Apparently Secure – Uncommon but not rare, and usually widespread in the state. Possible cause of long-term concern. Usually more than 100 occurrences and more than 10,000 individuals

TABLE 4.D.3.A	
NATURAL HERITAGE RANK DEFINITIONS	
S5	Secure – Common, widespread, and abundant in the state. Essentially ineradicable under present conditions. Typically with considerably more than 100 occurrences and more than 10,000 individuals.
SX	Presumed Extirpated – Element is believed to be extirpated from the state. Virtually no likelihood that it will be rediscovered.
SH	Possibly Extirpated (Historical) – Elements occurred historically in the state, and there is some expectation that it may be rediscovered. Its presence may not have been verified in the past 20 years.
S#S#	Range Rank – A numeric range rank (e.g., S2S3) is used to indicate the range of uncertainty about the exact status of the element. Ranges cannot skip more than one rank (e.g., SU should be used rather than S1S4).
SU	Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
S?	Unranked - State rank not yet assessed.
HYB	Hybrid - Element not ranked because it represents and interspecific hybrid and not a species.
SE	Exotic - An exotic species established in the state; may be native in nearby regions.
SE#	Exotic Numeric – An exotic established in the state that has been assigned a numeric rank to indicate its status, as defined for S1 through S5.
SZ	Zero Occurrences – Present but lacking practical conservation concern in the state because there are no definable occurrences, although the taxon is native and appears regularly in the state. An SZ rank will generally be used for long distance migrants whose occurrences during their migrations have little or no conservation value for the migrant, as they are typically too irregular (in terms of repeated visitation to the same locations), transitory, and dispersed to be reliably identified, mapped, and protected.
SP	Potential – Potential that element occurs in the state but no extant or historic occurrences are accepted.
SR	Reported – Element reported in the state but without a basis for either accepting or rejecting the report, or the report not yet reviewed. Some of these are very recent discoveries for which the program hasn't yet received first-hand information; others are old, obscure reports.
SRF	Reported Falsely – Element erroneously reported in the state and the error has persisted in the literature.
SSYN	Synonym – Element reported as occurring in the state, but state does not recognize the taxon; therefore the Element is not ranked by the state.
*	S rank has been assigned and is under review. Contact the individual state Natural Heritage Program for assigned rank.
B	Breeding – Basic rank refers to the breeding population of the Element in the state.
N	Non-breeding – Basic rank refers to the non-breeding population of the Element in the state.
?	Inexact Numeric Rank – Denotes inexact numeric rank.
C	Captive or Cultivated - Native element presently extant in the state only in captivity or cultivation or as a reintroduced population not yet established

TABLE 4.D.3.B	
FEDERAL STATUS DESIGNATIONS	
U.S. Fish and Wildlife Service (USFWS)	
*This value indicates status under the federal Endangered Species Act of 1973 based on categories defined by the U.S. Fish and Wildlife Service(16 U.S.C.S §1531-1543 (Supp.1996)).	
E	Endangered
T	Threatened
PE	Proposed Endangered
PT	Proposed Threatened
PC	Proposed Candidate
XE	Essential Experimental Population – An experimental population whose loss would be likely to appreciably reduce the likelihood of the survival of the species in the wild.
XN	Experimental Nonessential Population – An experimental population of a listed species reintroduced into a specific area that receives more flexible management under the Act.
C	Candidate (species for which the U.S. Fish and Wildlife Service has sufficient information on biological status and threats to propose listing as threatened or endangered).
CH	Critical Habitat – The specific areas within the geographic area occupied by a species, at the time it is listed, on which are found those physical or biological features essential to conserve the species and that may require special management considerations or protection; and specific areas outside the geographic area occupied by the species at the time it is listed upon determination that such area essential to conserve the species.
PDL	Proposed of delisting – Any species for which a final rule has been published in the Federal Register to delist the species.
DM	Recovered, delisted, and being monitored – Any previously listed species that is now recovered, has been delisted, and is being monitored.
S1	Critically imperiled: at high risk because of extreme rarity (often 5 or fewer occurrences), rapidly declining numbers, or other factors that make it particularly vulnerable to rangewide extinction or extirpation.
S2	Imperiled: at risk because of restricted range, few populations (often 20 or fewer), rapidly declining numbers, or other factors that make it vulnerable to rangewide extinction or extirpation.
S3	Vulnerable: at moderate risk because of restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors that make it vulnerable to rangewide extinction or extirpation.
S	Sensitive: animal and plant species identified by the Regional Forester for which population viability is a concern as evidenced by significant downward trend in population or a significant downward trend in habitat capacity.
W	Watch Plants:
Level I	Species having a high level of conservation priority because of declining status either in North Dakota or across their range; or a high rate of occurrence in North Dakota constituting the core of the species' breeding range, but are at-risk range wide, and non-State Wildlife Grants (SWG) funding is not readily available to them.
Level II	Species having a moderate level of conservation priority; or a high level of conservation priority, but a substantial amount of non-State Wildlife Grant funding is available to them.
Level III	North Dakota's species having a moderate level of conservation priority, but are believed to be peripheral or do not breed in North Dakota.

APPENDIX 4.E
Agency Notifications and Responses



**STATE
HISTORICAL
SOCIETY
OF NORTH DAKOTA**

Jack Dalrymple
Governor of North Dakota

February 4, 2015

North Dakota
State Historical Board

Ms. Raina G. Hanley
Project Coordinator
Beaver Creek Archaeology Inc.
1632 Capitol Way
Bismarck, ND 58501

Calvin Grinnell
New Town - President

A. Ruric Todd III
Jamestown - Vice President

Margaret Puetz
Bismarck - Secretary

ND SHPO REF.: 15-0659 PSC "New Town Line Extension: A Comprehensive Report of Class III Intensive Cultural Resource Inventories from 2013 and 2014 in Mountrail County, North Dakota" resubmittal

Albert I. Berger
Grand Forks

Dear Ms. Hanley,

Gereld Gertholz
Valley City

We reviewed ND SHPO REF.: 15-0659 PSC "New Town Line Extension: A Comprehensive Report of Class III Intensive Cultural Resource Inventories from 2013 and 2014 in Mountrail County, North Dakota," and find the revised report acceptable.

Diane K. Larson
Bismarck

Chester E Nelson, Jr.
Bismarck

We concur with a "No Significant Sites" determination for the project, provided the project remains as described and mapped in the above-captioned report by Brittany Brooks dated January 2015, and provided the sites listed for avoidance on pages 17-19 are avoided, (list attached). [Sites within the exterior boundaries of the Mandan Hidatsa Arikara Nation (MHAN) are not reviewed by this office and any comments will be from the MHAN THPO office].

Sara Otte Coleman
Director
Tourism Division

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Thank you for the opportunity to review this project. If you have questions please contact Susan Quinnell at squinnell@nd.gov or (701) 328-3576.

Mark Zimmerman
Director
Parks and Recreation
Department

Sincerely,

Grant Levi
Director

Department of Transportation


Claudia J. Berg
Director, State Historical Society of North Dakota

Claudia J. Berg
Director

Accredited by the
American Alliance
of Museums since 1986

The previously recorded Isolated Find (32MNx843) was not relocated during the cultural resources inventory. Isolated Finds are *not eligible* to the NRHP, and no avoidance is recommended necessary. During the pedestrian survey, no evidence of the Site Leads (32MNx122, 32MNx123, 32MNx130, 32MNx131, 32MNx174, 32MNx240, 32MNx241, and 32MNx356) were observed within the project area.

Four sites have been previously impacted by past pipeline construction (see Table 4). Of these four sites, two were previously recorded. Site 32MN562, a Native American stone feature site comprised of two cairns, was destroyed by an existing pipeline, not associated with this project, and is no longer eligible for the NRHP. Site 32MN1078, an *ineligible* Archaeological Historic site, consisting of a depression, was destroyed by an existing pipeline not associated with this project. As the site is not eligible for the NRHP not avoidance is necessary.

An existing pipeline, not associated with this project, has impacted the northwestern portion of the stone circle feature of site 32MN1300, which was recorded during this inventory. However, the site retains integrity, as the stone circle is still intact with some stones disturbed and is considered potentially *eligible* to the NRHP and should be avoided in the future. An as built portion of the New Town Line Extension pipeline is located directly adjacent to site 32MN1301, a cairn, recorded during this inventory. The cairn was not disturbed and retains integrity. The site is considered potentially *eligible* to the NRHP and should be avoided in the future. Site 32MN1300 is recommended to be avoided by a 50-ft buffer in conjunction with site monitoring. For site 32MN1301, it is recommended that construction activities stay within the previous pipeline disturbance on the opposite side of the existing pipeline. As a result of the avoidance measures, sites 32MN1300 and 32MN1301 will not be further impacted by the proposed project.

Table 4. Previously impacted sites.

SITS #	Description	NRHP Status	Recommendation
32MN562	Cairns (Destroyed)	Not Eligible	No avoidance necessary
32MN1078	Historic Depression (Destroyed)	Not Eligible	No avoidance necessary
32MN1300	Stone Circle	Unevaluated	Avoidance
32MN1301	Cairn	Unevaluated	Avoidance

The survey area is located in areas where it could potentially have an adverse effect on cultural resources (see Table 5). See Appendix D for site avoidance measures.

Table 5. Summary of Cultural Resources identified during the inventory located in or near the survey area.

SITS #	Description	NRHP Status	Recommendation
32MN72	Stone Circles, Eagle Trapping Pit, CM Scatter	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN562	Cairns (Destroyed)	Not Eligible	No avoidance necessary
32MN818	Soo Line	Not Eligible	Avoidance via boring
32MN830	Stone Circles, Other Stone Features	Unevaluated	Avoidance of 50' from the site boundary & monitoring or by staying within the existing disturbance
32MN900	Foundations, Depressions	Not Eligible	No avoidance necessary

New Town Line Extension: A Comprehensive Report of Class III Intensive Cultural Resource Inventories from 2013 and 2014 in Mountrail County, North Dakota

SITS #	Description	NRHP Status	Recommendation
32MN1076	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1077	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1078	Depression (Destroyed)	Not Eligible	No avoidance necessary
32MN1080	Stone Circles	Unevaluated	Avoidance by staying within the existing disturbance
32MN1081	Linear Alignment	Unevaluated	Avoidance of 75' from the site features & monitoring
32MN1082	Linear Alignment, Dirt Mound	Unevaluated	Avoidance of 75' from the site features & monitoring
32MN1083	Stone Circle, Cairns	Unevaluated	Avoidance of 75' from the site features & monitoring
32MN1088	Cairn	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1093	Barn, Granary, Well & Pump	Not Eligible	No avoidance necessary
32MN1094	Stone Circles	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1095	Stone Circle, Stone Arc	Unevaluated	Avoidance of 50' from the site boundary & monitoring or by staying within the existing disturbance
32MN1096	Stone Circles	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1098	Stone Circles	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1099	Cairn, Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1101	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1103	Cairns, Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1106	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1107	Stone Circles	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1108	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1109	Cairn, Stone Circles, Stone Arc	Unevaluated	Avoidance of 50' from the site boundary & monitoring or by staying within the existing disturbance
32MN1111	Outhouse, Farmhouse, Collapsed Storage Building	Not Eligible	No avoidance necessary
32MN1113	Cairn	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1122	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1123	Cairn, Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring

New Town Line Extension: A Comprehensive Report of Class III Intensive Cultural Resource Inventories from 2013 and 2014 in Mountrail County, North Dakota

SITS #	Description	NRHP Status	Recommendation
32MN1124	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1125	Cairn	Unevaluated	Avoidance of 50' from the site boundary & monitoring or by staying within the existing disturbance
32MN1126	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1127	Depression	Not Eligible	No avoidance necessary
32MN1128	Stone Circles	Unevaluated	Avoidance by staying within the existing disturbance
32MN1129	Cairn, Stone Circles	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1130	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1131	Cairn	Unevaluated	Avoidance of 50' from the site boundary & monitoring
32MN1132	Stone Circles	Unevaluated	Avoidance by staying within the existing disturbance
32MN1249	Culvert	Not Eligible	No avoidance necessary
32MN1250	Culvert	Not Eligible	No avoidance necessary
32MN1300	Stone Circle	Unevaluated	Avoidance of 50' from the site boundary & monitoring or by staying within the existing disturbance
32MN1301	Cairn	Unevaluated	Avoidance by staying within the existing disturbance
32MNx122	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx123	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx130	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx131	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx174	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx240	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx241	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx356	Site Lead: CM Scatter	Unevaluated	No avoidance necessary
32MNx843	Isolated Find: Flake	Not Eligible	No avoidance necessary

A buffer of 50 ft is recommended between the site boundaries and proposed construction activities; however, on the Fort Berthold Indian Reservation a buffer of 75 ft is recommended between the site features and proposed construction activities. In areas where a site is near an already constructed pipeline, it is recommended that construction activities stay on the opposite side of the existing pipeline. In areas where there is pipeline disturbance through a site, it is recommended that proposed construction activities stay within the already disturbed corridor if a 50-ft avoidance cannot be achieved. Fencing along site buffer lines in conjunction with site monitoring during construction would minimize any adverse effect to the sites.

Beaver Creek Archaeology, Inc. recommends that *unevaluated/potentially eligible* sites within 100 ft of the survey area have temporary site buffer fencing and monitoring during construction around these sites (see Avoidance Maps in Appendix D). No avoidance is recommended

June 19, 2014

Steve Dyke
Conservation Supervisor
North Dakota Game and Fish Department
100 N. Bismarck Expressway
Bismarck, ND 58501-5095

RE: Hiland Crude, LLC – New Town Extension Pipeline Mountrail County

Hiland Crude, LLC (Hiland) is constructing a 42.5-mile-long, crude oil pipeline as a gathering line in Mountrail County and the estimated completion is October 2014.

Due to continuing demand for additional crude oil pipeline services, Hiland intends to expand the system's capacity. A mid-route station is proposed to be added to boost capacity. This station may include a truck terminal, a 50,000 gallon tank, and a pump facility. These additions require approval from the North Dakota Public Service Commission.

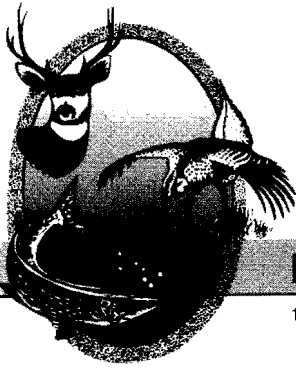
Keitu Engineers and Consultants, Inc. (Keitu) was contracted by Hiland to conduct the biological assessment of the 42.5 mile project corridor (1 mile wide) completed in May, 2014.

Enclosed is a map of the entire length of the pipeline route intended for the North Dakota Game and Fish Department's review. We respectfully request that any specific species of concern known in the area is brought to our attention to ensure we focus on those items.

As always, Keitu appreciates the opportunity to assist our client and the regulatory agencies with compliance. I will serve as the primary Keitu contact and can be reached at (701) 667-1800 or via email at kbecker@keitu.com.

Karine Becker
Staff Specialist

Enclosure: Pipeline Route Map



"VARIETY IN HUNTING AND FISHING"

NORTH DAKOTA GAME AND FISH DEPARTMENT

100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

July 14, 2014

Karine Becker
Staff Specialist
Keitu Engineers & Consultants, Inc.
PO Box 98
Mandan, ND 58554-0098

Dear Ms. Becker:

RE: Hiland Crude, LLC – New Town Extension Pipeline Project

Hiland Crude LLC is constructing a 42.5-mile-long crude oil pipeline as a gathering line in Mountrail County, North Dakota. Due to continuing demand for additional crude oil pipeline services, Hiland intends to expand the system's capacity. The North Dakota Game and Fish Department has reviewed this project for wildlife concerns.

A primary concern is the possible disturbance of native prairie and wooded draws associated with construction of the pipeline and other facilities. We ask that work within these areas be avoided to the extent possible, every effort be made to prevent destruction of woody vegetation, and disturbed areas be reclaimed to pre-project conditions. We also suggest that aerial surveys be conducted for raptor nests before construction begins.

The pipeline is routed adjacent to Lake Sakakawea. We recommend the pipeline maintain a one-half mile buffer from the lake. We ask that a leak detection system be implemented into the project, and automatic shut-off valves be located at frequent intervals along the length of the pipeline.

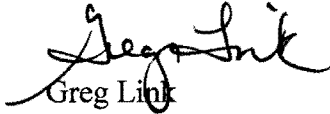
The pipeline route crosses the Little Knife River, a Class I fishery. We recommend that this stream be crossed by directional boring if possible. If this method is not feasible, construction should not take place within the waterway between April 15 and June 1, and controls should be implemented to minimize erosion and sedimentation.

The National Wetland Inventory indicates various wetlands within the project corridor. Steps should be taken to protect any wetlands that cannot be avoided, no alterations should be made to

existing drainage patterns, and above-ground appurtenances should not be placed in wetland areas.

We do not believe this project will have any significant adverse effects on wildlife or wildlife habitat, including species of concern, provided these recommendations are implemented where appropriate.

Sincerely,

A handwritten signature in black ink, appearing to read "Greg Link". The signature is written in a cursive style with a large, stylized "G" and "L".

Greg Link
Chief
Conservation & Communication Division

js

June 19, 2014

Mark Zimmerman
North Dakota Parks and Recreation
1600 E. Century Avenue, Suite 3
Bismarck, ND 58503-0649

RE: Hiland Crude, LLC – New Town Extension Pipeline Mountrail County

Hiland Crude, LLC (Hiland) is constructing a 42.5-mile-long, crude oil pipeline as a gathering line in Mountrail County and estimated completion is October 2014.

Due to continuing demand for additional crude oil pipeline services, Hiland intends to expand the system's capacity. A mid-route station is proposed to be added to boost capacity. This station may include a truck terminal, a 50,000 gallon tank, and a pump facility. These additions require approval from the North Dakota Public Service Commission.

Keitu Engineers and Consultants, Inc. (Keitu) was contracted by Hiland to conduct the biological assessment of the 42.5 mile project corridor (1 mile wide) completed in May, 2014.

Enclosed is a map of the entire length of the pipeline route intended for the North Dakota Parks and Recreation review. We respectfully request that any specific species of concern known in the area is brought to our attention to ensure we focus on those items.

As always, Keitu appreciates the opportunity to assist our client and the regulatory agencies with compliance. I will serve as the primary Keitu contact and can be reached at (701) 667-1800 or via email at kbecker@keitu.com.

Karine Becker
Staff Specialist

Enclosure: Pipeline Route Map



Jack Dalrymple, Governor
Mark A. Zimmerman, Director

1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649
Phone 701-328-5357
Fax 701-328-5363
E-mail parkrec@nd.gov
www.parkrec.nd.gov

June 26, 2014

Karine Becker
Keitu Engineers and Consulting, Inc
PO Box 98
1403 27th St NW
Mandan, ND 58554-0098

Re: Hiland Crude LLC New Town Extension Pipeline Mountrail County

Dear Ms. Becker:

The North Dakota Parks and Recreation Department (the Department) has reviewed the above referenced proposed Hiland Crude LLC New Town Extension Pipeline project in Mountrail County

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare plants and ecological communities). The project as defined does not affect state park lands that we manage or Land and Water Conservation Fund recreation projects that we coordinate.


The North Dakota Natural Heritage biological conservation database has been reviewed to determine if any plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the project area. Based on this review, we several species of concern and significant ecological communities documented in adjacent sections to project area. Please see the attached spreadsheet and map for more information on these occurrences.

Because this information is not based on a comprehensive inventory, there may be species of concern or otherwise significant ecological communities in the area that are not represented in the database. The lack of data for any project area cannot be construed to mean that no significant features are present. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources.

Regarding any reclamation efforts, we recommend that any impacted areas be revegetated with species native to the project area.

We appreciate your commitment to rare plant, animal and ecological community conservation, management and inter-agency cooperation to date. For additional information please contact me at (701-328-5370 or kgduttonhefner@nd.gov) Thank you for the opportunity to comment on this proposed project.

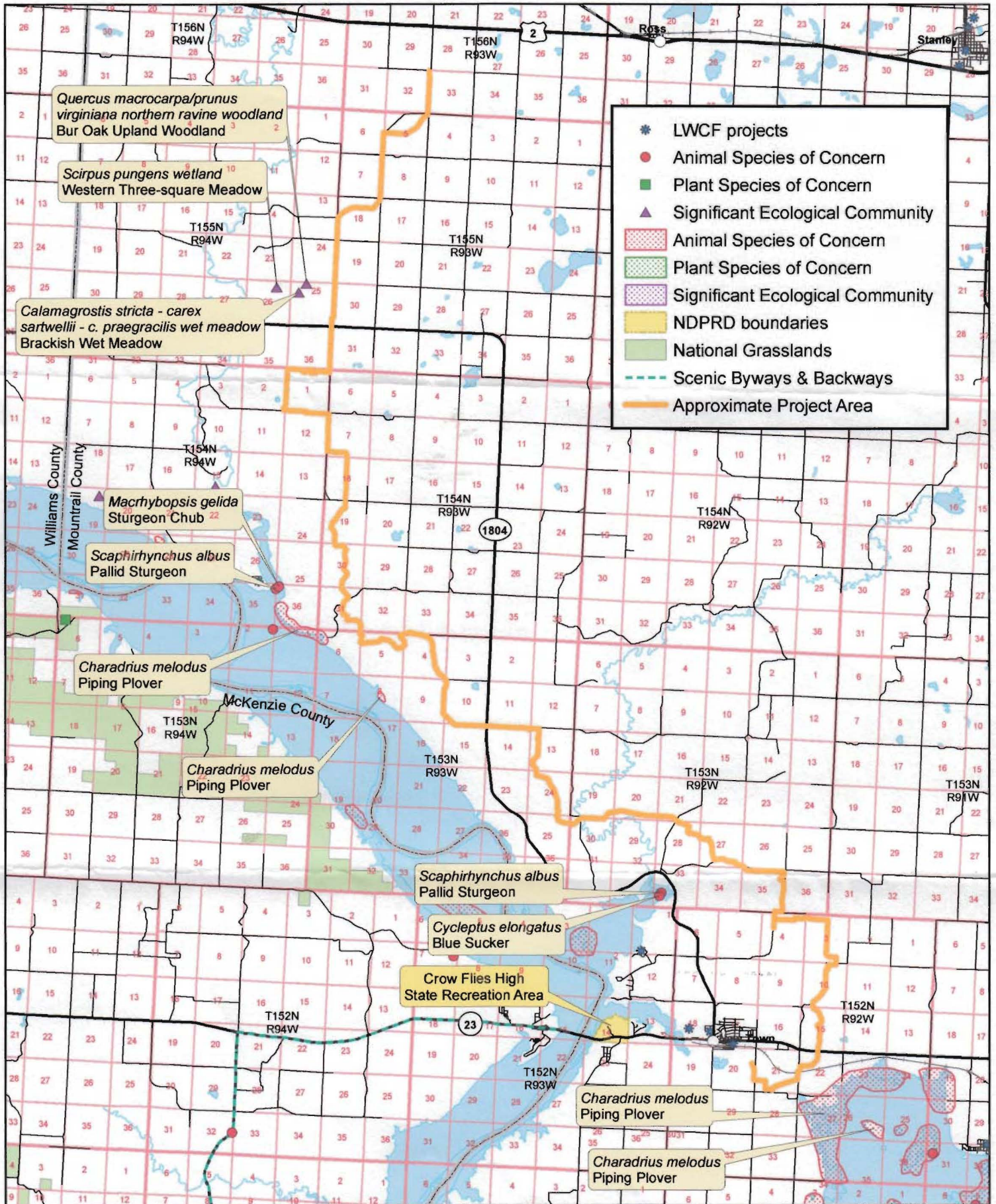
Sincerely,


Kathy Duttonhefner, Coordinator
Natural Resources Division

R.USNDNHI*2014_124KD/6/26/2014DL7.1.2014

.....
Play in our backyard!

North Dakota Parks and Recreation Department North Dakota Natural Heritage Inventory



North Dakota Natural Heritage Inventory
Rare Animal and Plant Species and Significant Ecological Communities

State Scientific Name	State Common Name	State Rank	Global Rank	Federal Status	Township Range Section	County	Last Observation	Estimated Representation Accuracy	Precision
<i>Calamagrostis stricta</i> - <i>Carex sartwellii</i> - <i>C. praeegracilis</i> wet meadow	Brackish Wet Meadow	S2S3	GNR		155N094W - 25	Mountrail	1987-07-02		S
<i>Charadrius melodus</i>	Piping Plover	S1S2	G3	LE,LT	152N092W - 26; 152N092W - 25	Mountrail	1996	Medium	S
<i>Charadrius melodus</i>	Piping Plover	S1S2	G3	LE,LT	152N092W - 27; 152N092W - 35; 152N092W - 26; 152N092W - 23; 152N092W - 34; 152N092W - 22; 152N092W - 24; 151N092W - 02; 151N092W - 03	Mountrail	2003-05-12	Medium	S
<i>Charadrius melodus</i>	Piping Plover	S1S2	G3	LE,LT	153N093W - 08	Mountrail	1989	Medium	S
<i>Charadrius melodus</i>	Piping Plover	S1S2	G3	LE,LT	154N094W - 36; 153N093W - 06; 154N094W - 35; 153N094W - 01	Mountrail	2003-05-12	Medium	S
<i>Cycleptus elongatus</i>	Blue Sucker	S3	G3G4		153N092W - 33; 153N092W - 27; 153N092W - 29; 153N092W - 31; 153N092W - 32; 153N092W - 34; 152N093W - 01; 152N093W - 02; 152N092W - 06; 153N092W - 28	Mountrail	1965-07-23		M
<i>Macrhybopsis gelida</i>	Sturgeon Chub	S2	G3		154N094W - 35; 154N094W - 34; 154N093W - 30; 153N094W - 02; 153N094W - 01; 154N094W - 23; 154N094W - 27; 154N094W - 25; 154N093W - 31; 154N094W - 26; 154N094W - 36; 154N094W - 24	McKenzie, Mountrail	1953-07-24		M
<i>Quercus macrocarpa/prunus virginiana</i> northern ravine woodland	Bur Oak Upland Woodland	S3	GNR		155N094W - 24; 155N094W - 25	Mountrail	1987-09-02		S
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	S1	G2	LE	153N092W - 33; 153N092W - 27; 153N092W - 29; 153N092W - 31; 153N092W - 32; 153N092W - 34; 152N093W - 01; 152N093W - 02; 152N092W - 06; 153N092W - 28	Mountrail	1974-07-10	Low	M
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	S1	G2	LE	154N094W - 35; 154N094W - 34; 154N093W - 30; 153N094W - 02; 153N094W - 01; 154N094W - 23; 154N094W - 27; 154N094W - 25; 154N093W - 31; 154N094W - 26; 154N094W - 36; 154N094W - 24	McKenzie, Mountrail	1970-07-29	Low	M
<i>Scirpus pungens</i> wetland	Western Three-square Meadow	S1	GNR		155N094W - 26	Mountrail	1987-09-02		S

North Dakota Natural Heritage Inventory Biological and Conservation Data Disclaimer

The quantity and quality of data collected by the North Dakota Natural Heritage Inventory are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in North Dakota have never been thoroughly surveyed, and new species are still being discovered. For these reasons, the Natural Heritage Inventory cannot provide a definite statement on the presence, absence, or condition of biological elements in any part of North Dakota. Natural Heritage data summarize the existing information known at the time of the request. Our data are continually upgraded and information is continually being added to the database. This data should never be regarded as final statements on the elements or areas that are being considered, nor should they be substituted for on-site surveys.

Estimated Representation Accuracy

Value that indicates the approximate percentage of the Element Occurrence Representation (EO Rep) that was observed to be occupied by the species or community (versus buffer area added for locational uncertainty). Use of estimated representation accuracy provides a common index for the consistent comparison of EO reps, thus helping to ensure that aggregated data are correctly analyzed and interpreted.

Very high (>95%)

High (>80%, <= 95%)

Medium (>20%, <= 80%)

Low (>0%, <= 20%)

Unknown

(null) - Not assessed

Precision

A single-letter code for the precision used to map the Element Occurrence (EO) on a U.S. Geological Survey (USGS) 7.5' (or 15') topographic quadrangle map, based on the previous Heritage methodology in which EOs were located on paper maps using dots.

S - Seconds: accuracy of locality mappable within a three-second radius; 100 meters from the centerpoint

M - Minute: accuracy of locality mappable within a one-minute radius; 2 km from the centerpoint

G - General: accuracy of locality mappable to map or place name precision only; 8 km from centerpoint

U - Unmappable

June 19, 2014

Dan Cimarosti
Regulatory Project Manager
North Dakota Regulatory Office
US Army Corps of Engineers
1513 South 12th Street
Bismarck, North Dakota 58504

RE: Hiland Crude, LLC – New Town Extension Pipeline Mountrail County

Hiland Crude, LLC (Hiland) is constructing a 42.5-mile-long, crude oil pipeline as a gathering line in Mountrail County and estimated completion is October 2014.

Due to continuing demand for additional crude oil pipeline services, Hiland intends to expand the system's capacity. A mid-route station is proposed to be added to boost capacity. This station may include a truck terminal, a 50,000 gallon tank, and a pump facility. These additions require approval from the North Dakota Public Service Commission.

Keitu Engineers and Consultants, Inc. (Keitu) was contracted by Hiland to conduct the biological assessment of the 42.5 mile project corridor (1 mile wide) completed in May, 2014.

Enclosed is a map of the entire length of the pipeline route intended for the US Army Corps of Engineers review. We respectfully request that any specific species of concern known in the area is brought to our attention to ensure we focus on those items.

As always, Keitu appreciates the opportunity to assist our client and the regulatory agencies with compliance. I will serve as the primary Keitu contact and can be reached at (701) 667-1800 or via email at kbecker@keitu.com.

Karine Becker
Staff Specialist

Enclosure: Pipeline Route Map

June 19, 2014

Scott Larson
Field Supervisor
North Dakota Field Office
U.S. Fish and Wildlife Service
3425 Miriam Avenue
Bismarck, North Dakota 58501-7926

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Karine Becker
Staff Specialist

Enclosure: Pipeline Route Map



United States Department of the Interior



FISH AND WILDLIFE SERVICE
North Dakota Ecological Services Field Office
3425 Miriam Avenue
Bismarck, North Dakota 58501
(701) 250-4481, ndfieldoffice@fws.gov

July 23, 2014

Karine Becker, Staff Specialist
Keitu Engineers and Consultants, Inc.
1403 27th Street NW
Mandan, North Dakota 58554-0098

Dear Ms. Becker:

This is in response to your letter dated June 19, 2014, regarding a 42.5-mile crude oil pipeline, the New Town Extension Pipeline, to be constructed in Mountrail County. A mid-route station is proposed to be added to boost capacity. The proposed line would be built by Hiland Crude, LLC (Hiland) and has an estimated completion date of October 2014.

The U.S. Fish and Wildlife Service (Service) offers the following comments under the authority of and in accordance with the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 *et seq.*), the Endangered Species Act (ESA) (16 U.S.C. 1531 *et seq.*), the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57), and the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668d, 54 Stat. 250).

Threatened, Endangered and Candidate Species

To obtain information on Service trust resources including federally threatened, endangered and candidate species and designated critical habitat that may occur in the identified areas, or may be affected by the proposed activities, we recommend you access the North Dakota Ecological Services Field Office website at <http://www.fws.gov/northdakotafieldoffice/>. You may also access the Service's Information, Planning, and Conservation System (IPaC) website at <http://ecos.fws.gov/ipac/>.

If a non-federal entity receives federal funding for an activity, or if any federal permit or license is required, the federal agency may designate, in writing, the fund recipient or permit applicant as its agent for purposes of informal section 7 consultation. The funding, permitting, or licensing federal agency is responsible to ensure that its actions comply with the ESA, including obtaining concurrence from the Service for any action that may affect a threatened or endangered species, or result in the destruction or adverse modification of designated critical habitat.

Because there is no Federal nexus for the proposed project, it is not necessary to make determinations for listed species. Private individuals and companies however, are required to ensure that their actions do not result in "take" of federally listed animals. Take is broadly

defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct”. Section 10(a)(1)(B) of the ESA allows non-Federal parties planning activities that have no Federal nexus, but which could result in the incidental taking of listed animals, to apply for an incidental take permit. (A Federal nexus exists whenever an activity is authorized, funded, or carried out by a Federal agency). The application must include a habitat conservation plan (HCP) describing the proposed actions, determining the effects of those actions on Federally-listed plant and wildlife species and their habitats (and may include proposed or candidate species), and defining measures to minimize and mitigate adverse effects.

Whooping Crane

The Aransas Wood Buffalo Population (AWBP) of the endangered whooping crane (*Grus americana*) is the only self-sustaining migratory population of whooping cranes remaining in the wild. Whooping cranes breed in the wetlands of Wood Buffalo National Park in Alberta and the Northwest Territories of northern Canada, and overwinter on the Texas coast. Whooping cranes in the AWBP annually migrate through North Dakota during their spring and fall migrations.

The proposed project lies within a corridor that includes approximately 95 percent of all reported whooping crane sightings in the State (enclosure). The presence of suitable roosting and feeding habitat for whooping cranes indicate the potential for whooping crane presence in the proposed project area. The Service recommends that if a whooping crane is sighted within one mile of project while it is under construction, that all work cease within one mile of that part of the project and the Service be contacted immediately. In coordination with the Service, work may resume after the bird(s) leave the area. Whooping cranes are unlikely to spend more than a few days in any one spot during migration.

Piping Plover

Piping plovers, a federally threatened species, are known to nest in the proposed project area. In North Dakota, piping plovers begin arriving on their breeding grounds in early to mid-April and are typically gone by September 1. Construction or maintenance activities during this time period may disturb nesting piping plovers. Critical habitat has been designated for the piping plover. Critical habitat can be viewed on the Service website at http://www.fws.gov/northdakotafieldoffice/endspecies/species/piping_plover.htm. Piping plover critical habitat in the project area, if the project is near alkali lakes, consists of sparsely vegetated beaches, salt-encrusted mud flats, and/or gravelly salt flats, and adjacent uplands 200 ft. (61 m) above the high water mark of alkali lakes and wetlands (enclosure). Piping plover critical habitat in the project area, if the project is near the Missouri River system, consists of sparsely vegetated riverine sandbars and unvegetated shoreline along the Missouri River system. The Service recommends a ½ mile no entry buffer around all designated critical habitat and on wetlands with potential or documented plover nesting during the breeding season. If you are unable to maintain a ½ mile buffer around all piping plover nesting wetlands, the Service recommends that the project proponent provide additional protective measures in these areas to avoid the potential take of piping plovers. Piping plover mortalities have been documented as a result of collision with overhead transmission lines. The Service recommends installing and maintaining visual

marking devices on all aboveground lines, including guywires, within one mile of designated piping plover critical habitat.

Least Tern

The breeding season for the interior population of the least tern lasts from May through August. The peak of the nesting season occurs from mid-June to mid-July. Nests are bowl-shaped depressions, about 4" across, on barren, sandy areas. Least terns nest in colonies where the nests can be as close as a few feet apart. In North Dakota, the least tern utilizes sparsely vegetated sandbars on the Missouri and Yellowstone Rivers. Terns forage for small fish in the river and nearby wetlands.

Pallid Sturgeon

The pallid sturgeon is an ancient fish that evolved in turbid, free-flowing, large rivers with braided channels, sandbars and extensive backwater habitats, and was listed in 1990 as an endangered species. Historically, pallid sturgeon were found in the lower 200 miles of the Yellowstone River; the Missouri River from Fort Benton, Montana to St. Louis, Missouri; and in portions of the Mississippi River basin. The species is now found only in fragmented segments of free flowing rivers within the historic range, as well as upstream portions of impoundments.

Proposed Species

Northern Long-Eared Bat

The northern long-eared bat (*Myotis septentrionalis*) (NLEB) is currently proposed for listing as endangered under the Endangered Species Act (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). The final listing decision for the NLEB is expected in April 2015. At this time, no critical habitat has been proposed for the NLEB. The state of North Dakota is within the known range of the NLEB. During the summer, NLEBs typically roost singly or in colonies in cavities, underneath bark, crevices, or hollows of both live and dead trees and/or snags (typically ≥ 3 inches dbh). Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat seems opportunistic in selecting roosts, using tree species based on presence of cavities or crevices or presence of peeling bark. It has also been occasionally found roosting in structures like barns and sheds (particularly when suitable tree roosts are unavailable). They forage for insects in upland and lowland woodlots and tree lined corridors. During the winter, NLEBs predominately hibernate in caves and abandoned mine portals. Additional habitat types may be identified as new information is obtained.

Species proposed for listing are not afforded protection under the ESA; however as soon as a listing becomes effective, the prohibition against jeopardizing its continued existence and "take"¹ applies regardless of an action's stage of completion. If the agency retains any discretionary involvement or control over on-the-ground actions that may affect the species after listing, section 7 applies. Therefore, if suitable NLEB habitat is present within the proposed project area, we recommend further coordination with our office to avoid potential project delays should

the species be listed. Additional information regarding NLEB and conference procedures can be found at <http://www.fws.gov/midwest/endangered/mammals/nlba/index.html>.

Dakota Skipper

The Dakota skipper (*Hesperia dacotae*), a proposed threatened species, is a small to medium-sized hesperiine butterfly associated with high quality prairie ranging from wet-mesic tallgrass prairie to dry-mesic mixed grass prairie. The final listing decision for the Dakota skipper is expected in October 2014. The first type of habitat is relatively flat and moist native bluestem prairie. Three species of wildflowers are usually present: wood lily (*Lilium philadelphicum*), harebell (*Campanula rotundifolia*), and smooth camas (*Zygadenus elegans*). The second habitat type is upland (dry) prairie that is often on ridges and hillsides. Bluestem grasses and needlegrasses dominate these habitats. On this habitat type, three wildflowers are typically present in high quality sites that are suitable for Dakota skipper: pale purple (*Echinacea pallida*) and upright (*E. angustifolia*) coneflowers and blanketflower (*Gaillardia sp.*). Because of the difficulty of surveying for Dakota skippers and a short survey window, we recommend that the project avoid any impacts to potential Dakota skipper habitat.

Candidate Species

Sprague's Pipit

Sprague's pipit (*Anthus spragueii*) was added to the candidate species list in 2010. Candidate species such as the Sprague's pipit are not protected under the ESA. However, Sprague's pipit is a migratory bird protected under the MBTA. Sprague's pipits require large patches of grassland habitat for breeding, with preferred grass height between 4-12 in. (10-30 cm). The species prefers to breed in well-drained, open grasslands and avoids grasslands with excessive shrubs. They can be found in lightly to heavily grazed areas. They avoid intrusive human features on the landscape, so the impact of a development can be much larger than the actual footprint of the feature. If Sprague's pipit habitat is present within your proposed project area, the Service requests that you document any steps taken to avoid and minimize disturbance of this habitat, and that you share this information with our office.

No legal requirement exists to protect candidate species; however, it is within the spirit of the ESA to consider these species as having significant value and worth protecting. The Service's Candidate Conservation Program provides a means for conserving these species. Early conservation preserves management options, minimizes the cost of recovery, and reduces the potential for restrictive land use policies in the future. Through Candidate Conservation Agreements and Candidate Conservation Agreements with Assurances the Service can work with interested public and private parties to identify threats to candidate species or species at risk. If there is a federal nexus, a federal agency may also request a conference on any proposed action that may affect a proposed or candidate species.

Migratory Birds

The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, and transportation, (among other actions) of migratory birds, their eggs, parts, and nests, except when specifically permitted by regulations. While the MBTA has no provision for allowing incidental take, the Service realizes that some birds may be killed during project construction and operation even if all known reasonable and effective measures to protect birds are used. The Service's Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and agencies that have taken effective steps to avoid take of migratory birds, and by encouraging others to implement measures to avoid take of migratory birds. It is not possible to absolve individuals, companies, or agencies from liability even if they implement bird mortality avoidance or other similar protective measures. However, the Office of Law Enforcement focuses its resources on investigating and prosecuting individuals, companies, and agencies that take migratory birds without identifying and implementing all reasonable, prudent, and effective measures to avoid that take. Individuals, companies, or agencies are encouraged to work closely with Service biologists to identify available protective measures when developing project plans and/or avian protection plans, and to implement those measures prior to/during construction or similar activities.

To the extent practicable, schedule construction for late summer or fall/early winter so as not to disrupt migratory birds during the breeding season, February 1 to July 15 (**note that if least terns (*Sternula antillarum*) and/or piping plovers (*Charadrius melodus*) are present, the breeding season may extend through August 31**). If work is proposed to take place during the breeding season, there may be take of migratory birds, their eggs, or active nests. If project construction cannot avoid the nesting season, the Service suggests that the vegetation within the proposed project area be mowed/cleared outside of the nesting season, in advance of the project initiation to remove potential breeding habitat for nesting migratory birds in the project area. Once cleared, the project area should be maintained in a state that is unsuitable for nesting until the end of the breeding season or until construction is complete. Alternatively, a qualified biologist could be hired to conduct bird/nest surveys within five days prior to the initiation of construction. If active nests are identified, the project proponent should cease construction, maintain a sufficient buffer around active nests to avoid disturbing breeding activities and contact the Service immediately. The Service recommends that Hiland implement all practicable measures to avoid all take, such as suspending construction where necessary, and/or maintaining adequate buffers to protect the birds until the young have fledged. The Service further recommends that if you choose to conduct field surveys for nesting birds with the intent of avoiding take, that you maintain any documentation of the presence of migratory birds, eggs, and active nests, along with information regarding the qualifications of the biologist(s) performing the survey(s), and any avoidance measures implemented at the project site. Should surveys or other available information indicate a potential for take of migratory birds, their eggs, or active nests, the Service requests that you contact this office for further coordination on the extent of the impact and the long-term implications of the intended use of the project on migratory bird populations.

Our GIS analysis of the proposed project shows that it crosses a number of wetlands and native prairie. These habitat types provide important ecological services, including nesting and foraging habitat for migratory birds. Wetlands take at least two to three years for the vegetation to return, and at least this long for full functionality to be recovered. Native prairie can take a decade or more to recover, and even then, the replanted area is not as diverse as the original habitat. Additionally, non-natives which become established when the project area is disturbed may spread into the adjacent prairie.

To help ameliorate these impacts, the Service suggests that Hiland develop a conservation plan for migratory birds to compensate for the impacts associated with the construction, operation, and maintenance of the proposed project. We recommend that the conservation plan include the following: an analysis of the type and acreage of each habitat impacted; a discussion of how impacts on native habitat (wetlands, native prairie, woody draws) will be avoided or minimized to the extent practicable; a plan to reclaim the native habitat that cannot be avoided; a monitoring plan to ensure that reclamation is successful and that non-natives do not take over; and a compensation plan for the impacts on native habitat that cannot be avoided. As part of the conservation plan, we encourage Hiland consider purchasing perpetual grassland easements or perform additional habitat mitigation to ensure that the overall amount and quality of native habitat does not decline as a result of this project. In addition to benefitting migratory birds, the actions in the conservation plan may also benefit any proposed and candidate species that may be affected.

Bald and Golden Eagles

Bald and Golden Eagles are federally-protected under both the BGEPA and the MBTA. The BGEPA prohibits anyone without a permit issued by the Secretary of the Interior from taking bald eagles (*Haliaeetus leucocephalus*) or golden eagles (*Aquila chrysaetos*), including their parts, nests, or eggs. The BGEPA provides criminal and civil penalties for persons who take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald or golden eagle, alive or dead, or any part, nest, or egg thereof. The BGEPA defines take as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior. In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagles return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

The Service's overall management objective for golden eagle and bald eagle populations is to ensure no declines in breeding populations of either species. Numerous relatively minor disruptions to eagle behaviors from multiple activities, even if spatially or temporally distributed, may lead to disturbance that would not have resulted from fewer or more carefully sited

activities. The accumulation of multiple land development projects or siting of multiple infrastructures that may be hazardous to eagles can cumulatively reduce the availability of alternative sites suitable for breeding, feeding, or sheltering, resulting in a greater than additive risk of take to eagles.

If your proposed activity is anticipated to result in take of bald or golden eagles, you must first apply for, and receive a permit to take prior to the taking. The determination of the likelihood of take will entail identifying the impacts of your proposed activity.

According to the Service's data, there are documented eagle nests in proximity to your proposed activity. There may be additional eagle nests in proximity to the proposed activity.

Recommendations Specific to Bald Eagles

The size and shape of effective buffers vary depending on the topography and other ecological characteristics surrounding the nest site. In open areas where there are little or no forested or topographical buffers, such as in North Dakota, distance alone must often serve as the buffer. To avoid/minimize impacts to nesting bald eagles from construction activities, the Service recommends: (1) keeping a minimum ½-mile buffer between the activity and any bald eagle nest if no landscape buffer exists; (2) keeping a minimum 660-foot buffer and maintaining a landscape buffer or natural areas between the activity and around nest trees; and (3) avoiding activities during the bald eagle breeding season (February 1 – July 15). The buffer areas serve to minimize visual and auditory impacts associated with human activities near nest sites. Ideally, buffers would be large enough to protect existing nest sites and provide for alternative or replacement nest sites. The Service's May 2007, National Bald Eagle Management Guidelines contains detailed information on protecting bald eagles from disturbance due to human activity. The guidelines can be accessed on the Service's website at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BaldEagle/NationalBaldEagleManagementGuidelines.pdf>.

Recommendations Specific to Golden Eagles

Information available to the Service regarding all existing and recent breeding territory data indicates that golden eagles may be present in your proposed activity area. Therefore, we recommend that you make every effort to avoid impacts to golden eagles. If activities are planned within a golden eagle territory, an assessment of the potential for take of a golden eagle will need to be made in conjunction with this office. This entails identifying your proposed activities that may occur in a golden eagle breeding territory, and sharing that information with this office.

The Service recommends that surveys be conducted prior to any on-the-ground activities to determine the extent of any golden eagle breeding territories in the area that may be affected by the proposed activity. The Service recommends that aerial nest surveys (preferably by helicopter) be conducted within a one-mile wide evaluation corridor or buffer to identify any occupied and unoccupied eagle nest sites in proximity to the proposed project area, including any proposed new access roads. Aerial surveys should be conducted between March 1 and May 15, before leaf-out, so that nests are visible, and so their status (active or inactive) can be

determined. A nesting territory or inventoried habitat should be designated as unoccupied by golden eagles ONLY after at least two complete aerial surveys in a single breeding season. Aerial surveys should include the following:

1. Due to the ability to hover and facilitate observations of the ground, helicopters are preferred over fixed wing aircraft, although small aircraft may also be used. The Service requests that Hiland report any eagle nests found, as well as nests of any other raptors found during the survey. Whenever possible, two observers should be used to conduct the surveys.
2. Observations of any eagle nest sites should be recorded using GPS. The date, location, nest condition, activity status, and habitat should be recorded for each sighting.
3. We request that you share the qualifications of the biologist(s) conducting the survey, method of survey, and results of the survey with the Service.

Alternatively, Hiland could conduct ground surveys to identify golden eagle nests within a one-mile wide evaluation corridor or buffer between March 1 and May 15. However, be aware that ground surveys are much less reliable than aerial surveys, even during leaf-off conditions, and typically may miss $\frac{3}{4}$ of eagle nests present. At least two ground observation periods lasting at least four hours or more are necessary to designate an inventoried habitat or territory as unoccupied as long as all potential nest sites and alternate nests are visible and monitored. If a golden eagle nest is observed, the project proponent should contact the Service for further consultation.

Please note that maintenance of a minimum $\frac{1}{2}$ -mile buffer around active nests may not be adequate to ensure avoidance of take of golden eagles. If the project proponent or federal action agency, if applicable, in conjunction with the Service, determines that any level of take is anticipated, including take due to disturbance, you should work with this office to modify your activity to avoid the take, or apply for a take permit and include the following information:

1. Collect and synthesize relevant project and biological data.
2. Document project avoidance and minimization measures.
3. Quantify the anticipated take.
4. Submit an application and furnish all required information.

Water Bodies, Including Wetlands

Our review of the National Wetland Inventory (NWI) maps and photographs indicate the proposed planning area includes numerous wetland basins and stream channels. You may access the NWI data directly through their website (wetlands.fws.gov). Projects which involve the burying of a pipeline should not significantly affect wetland basins or stream channels provided precautions are taken to restore natural basin contours. Precautions should also be taken during installation of underground facilities by sufficiently compacting trenches through the wetlands to prevent drainage along the trench or through bottom seepage. The Service recommends that construction through or adjacent to these areas be avoided where possible or measures be taken (e.g. directional boring) to minimize disturbance to these areas.

A Corps of Engineers permit pursuant to Section 404 of the Clean Water Act may be required if dredge or fill material will be placed in waters of the United States, including certain wetlands. We recommend contacting the North Dakota Regulatory Program Manager, U.S. Army Corps of Engineers, 1513 South 12th Street, Bismarck, ND 58504; Phone: (701) 255-0015, to request their permit requirements. If a 404 permit is required, the Service will also provide recommendations on this project to the Corps.

Fish and Wildlife Service Property Interests

The Service administers National Wildlife Refuges and Waterfowl Production Areas owned in fee title as well as wetland and grassland easements throughout North Dakota, including an ongoing easement acquisition program. A review of Service realty records indicates Service property interests may be located in the planning area.

The Service recommends that all property interests within the National Wildlife Refuge System be avoided whenever possible. A special use permit or right-of-way will be necessary for construction affecting property interests administered by the Service. The issuance of a special use permit or right-of-way is subject to the final determination of a refuge compatibility review process. This determination may add some time to the review process so early coordination with the affected Refuge or Wetland Management District is important. Please contact David Gillund, Project Leader, Crosby Wetland Management District, 10100 Hwy 42 NW, Crosby, ND 58730; Phone: (701)965-6488; Email: david_gillund@fws.gov, for additional information on Service property interests and specific information relative to Service easements and up to date realty records.

Restoration

The Service recommends that Hiland develop and implement a comprehensive restoration plan, in particular for the grassland and impacted wetlands along the proposed project route. The Service recommends that Hiland survey the native habitats along the proposed project route to determine existing species composition and replant with a mix designed to replace the diversity and composition of plant communities along the pipeline route area. While commercial cultivars of native seeds can be effectively used to boost production, we recommend that Hiland collect local seeds during the summer/fall to replant the disturbed areas. If seeds and/or plants are obtained commercially, we recommend obtaining seed stock from nurseries within 250 miles of the project area to ensure the particular cultivars are well adapted to the local climate. The Natural Resources Conservation Service (NRCS) compiles a list of vendors in North Dakota that supply conservation seed and plants at <http://www.plant-materials.nrcs.usda.gov/pubs/ndpmmcmt8152.pdf>.

The prairie is most likely to recover if replanted with a diverse mix using local cultivars. Including more species, including numerous forb species, is not only ecologically beneficial but is also more weed resistant, allowing for less intensive management and chemical use. In essence, the more species included in a mixture, the higher the probability of providing competition to resist invasion by non-native plants.

Specifically, the Service recommends that the following recommendations be incorporated when replanting grassland areas:

- Plant a high diversity seed mix (minimum of 19 species).
- The mix should include **at least** 9 grass species and 10 forb species. Avoid excessively low (<10) and excessively high (>30) forb species.
- Use planting equipment that will adequately disperse variable seed sizes.
- Control litter build up throughout establishment and management phase.

The Service recommends using broadcast seeding, which tends to produce higher germination per species of grasses and forbs than drill seeding. If germination is low, we recommend reseeding early in the restoration time period to meet the final performance metrics.

Based on previous planting experience, we anticipate that there may not be much Canada thistle present in the first year, but it will increase in ensuing years until natives become established and can out-compete it. Since herbicide application will kill all forbs, invasives like Canada thistle must be spot-sprayed. Mowing can be used to impede thistle growth, but since tall natives will shade thistle out, mowing should be used judiciously since it cuts down all species indiscriminately. The following forbs are in the same functional group as Canada thistle. Once they become established, they can out-compete Canada thistle:

- Black-eyed susan
- common gaillardia
- upright prairie coneflower
- tall cinquefoil
- stiff goldenrod
- hoary verbena
- Lewis flax
- common evening primrose
- Maximillian sunflower
- purple prairie clover
- Canada milkvetch

We recommend that the restoration plan include the following commitments. The replanted grassland areas will be monitored for a minimum of five years, with the first year being the first full growing season after planting. Checking on progress before the first full growing season is advisable to identify and treat any areas in which noxious weeds are becoming established. We recommend that the replanted areas will be burned or grazed every three-to-five years starting in year three or four.

The Service recommends that the restoration plan include a rigorous, sample-based approach to evaluate planting success. We recommend using a randomly placed one-foot quadrat, with a minimum of ten replicates per ten acres. There should be a density of at least three-to-five native seedlings (of the planted mix or volunteer native species) per square foot of area. If at least three of the seedlings are rhizomatous species, the lower limit of three seedlings per square foot is

adequate. The upper limit of five seedlings per square foot is necessary when all are bunch-type species or a mixture of rhizomatous and bunch-type species. Invasive and weedy species should be less than 25% cover across each area by year two of the planting.

For each replanted area to be considered reclaimed, no more than 30 percent of the cover area (as measured in the one-foot quadrats) should be non-native species, with no more than 15 percent invasive species. These criteria should be met for at least the final two consecutive years post reclamation, so in a best-case scenario, an area could be considered reclaimed if it meets the above criteria in years four and five after planting. As the Service has noted previously, in our experience native prairie usually takes at least ten years to become established. Ongoing management will likely be required to control invasive species even after this time. We recommend that Hiland develop a management plan for continued invasive species control.

The Herbaceous Vegetation Establishment Guide (USDA-NRCS 2011) located at http://efotg.sc.egov.usda.gov/references/public/ND/Herbaceous_Veg_Est_Guide.pdf, can be used for additional guidance regarding reclaiming grassland areas. However keep in mind that this document includes replanting with non-native species. Some of the recommendations cannot be transferred directly.

Similarly, for wetlands and native woodlands and scrubland areas, Hiland should develop a restoration plan including monitoring commitments and clear criteria that define success. Restoration should not be considered complete until those criteria are met.

We appreciate your efforts to insure the conservation of listed species as part of our joint responsibilities under the Act. For further information, please have your staff contact Heidi Riddle of my staff at (701) 355-8503 or at the letterhead address.

Sincerely,



Scott Larson
Field Supervisor
North Dakota and South Dakota Field Offices

cc: USFWS, Lostwood Wetland Management District, Kenmare, ND (Attn: D. Gillund)

June 19, 2014

David Gillund
Project Leader
Crosby Wetland Management District
10100 Hwy 42 NW
Crosby, ND 58730

RE: Hiland Crude, LLC – New Town Extension Pipeline Mountrail County

Hiland Crude, LLC (Hiland) is constructing a 42.5-mile-long, crude oil pipeline as a gathering line in Mountrail County and estimated completion in October 2014.

Due to continuing demand for additional crude oil pipeline services, Hiland intends to expand the system's capacity. A mid-route station is proposed to be added to boost capacity. This station may include a truck terminal, a 50,000 gallon tank, and a pump facility. These additions require approval from the North Dakota Public Service Commission.

Keitu Engineers and Consultants, Inc. (Keitu) was contracted by Hiland to conduct the biological assessment of the 42.5 mile project corridor (1 mile wide) completed in May, 2014.

Enclosed is a map of the entire length of the pipeline route intended for the Crosby Wetland Management Districts review. We respectfully request that any specific species of concern known in the area is brought to our attention to ensure we focus on those items.

As always, Keitu appreciates the opportunity to assist our client and the regulatory agencies with compliance. I will serve as the primary Keitu contact and can be reached at (701) 667-1800 or via email at kbecker@keitu.com.

Karine Becker
Staff Specialist

Enclosure: Pipeline Route Map

APPENDIX 4.F
Tree and Shrub Inventory

September 11, 2014

Jim Suttle
Hiland Crude, LLC
Suite 100
302 North Independence St
Enid, OK 73701

Via Electronic Mail

Tree and Shrub Inventory
New Town Extension Crude Oil Pipeline

Per your request, Keitu Engineers & Consultants, Inc. (Keitu) performed a tree and shrub removal inventory for the 42.5 mile New Town Extension (Project) of the Market Center Pipeline.

Keitu estimated the number of trees and shrubs cleared during construction. Trees and shrubs were inventoried in windbreaks, shelterbelts and all other wooded areas affected by the Project right-of-way (ROW) and temporary workspaces.

Ryan King and Sam Swanberg of Keitu performed the tree and shrub inventory along the Project route by foot on September 9th and 10th of 2014. Along the Project route, a constant 75 foot corridor was surveyed and trees and shrubs were identified to genus and species and tallied.

The trees and shrubs along the ROW were removed without a pre-construction survey being completed. The number and species of trees and shrubs removed needed to be estimated by taking into account which trees were found on either side of the ROW and estimating the number of trees removed in between. For example, if a creek bed was crossed and on the edge of the corridor there were five green ash trees in a 100 square foot area, then we would assume that the disturbed area would have similar tree numbers and sizes. In most cases, the pipeline was already in place so this was the primary method used.

Typical Tree and Shrub Mitigation Specifications (TSMS) require the inventory of woody plants anticipated to be cleared within woodlots as follows: all trees of one-inch diameter at breast height (dbh) and greater; shrubs anticipated to be cleared within the permanent ROW; and shrubs anticipated to be cleared in areas where topsoil would not be preserved and replaced.

Trees and shrubs with multiple stems were counted based on connection to the common rootstock and not as individual stems. If field personnel were unable to identify a tree or shrub in the field, plant material samples were collected, photographs of the stem, leaves or other unique features were taken and a detailed description of the plant was recorded and later identified.

During the September 2014 tree inventory, a total of 857 individual trees and shrubs were estimated to be removed within the 75-foot construction corridor. Within the areas inventoried, two tree and four shrub species were identified. Tables 1 and 2 show the tree and shrub species and estimated number removed.

Table 1: Estimated Tree Species Removed

Common Name	Scientific Name	Estimated Number Removed
Ash, Green	<i>Fraxinus pennsylvanica</i>	93
Elm, Siberian	<i>Ulmus pumila</i>	26
Total Trees		119

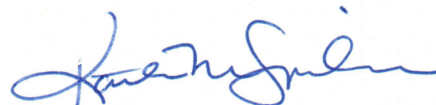
Table 2: Estimated Shrub Species Removed

Common Name	Scientific Name	Estimated Number Removed
Buffaloberry, Silver	<i>Shepherdia argentea</i>	300
Chokecherry	<i>Prunus virginiana</i>	165
Hawthorn, Arnold	<i>Crataegus arnoldiana</i>	245
Locust, Black	<i>Robinia pseudoacacia</i>	28
Total Shrubs		738
Total Trees and Shrubs		857

Keitu appreciates the opportunity to work with you on this project. Please contact me at your convenience with questions or comments you may have at 701-667-1808 ext. 100 or via email at kspilman@keitu.com.



Ryan King
Staff Consultant
Keitu Engineers & Consultants, Inc.



Kathleen M. Spilman, P.E.
Managing Director
Keitu Engineers & Consultants, Inc.

cc: Lawrence Bender / Fredrikson & Byron, P.A. (electronic)
Jillian Rupnow / Fredrikson & Byron, P.A. (electronic)