Appendix F. Wetlands and Other Waters

F.1. Wetland and Other Waters Impact Tables

F.1.1. Alternative B (without options) Wetland and Other Waters Impact Tables

Table F.1. Alternative B (without options) Wetland Impacts

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
1	Sec. 33, T140N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
2	Sec. 33, T140N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
3	Sec. 33, T140N, R99W	Ditch	Artificial	N	0.00	0.06	N	N	N
4	Sec. 29, T140N, R99W	Ditch	Artificial	N	0.00	0.07	N	N	N
5	Sec. 29, T140N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
6	Sec. 28, T140N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
7	Sec. 28, T140N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
8	Sec. 29, T140N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
9	Sec. 20, T140N, R99W	Ditch	Artificial	N	0.01	0.01	N	N	N
10	Sec. 20, T140N, R99W	Ditch	Artificial	N	0.00	0.18	N	N	N
11	Sec. 20, T140N, R99W	Basin	Natural	N	0.06	0.10	Y	N	N
12	Sec. 21, T140N, R99W	Ditch	Artificial	N	0.00	0.04	N	N	N
13a	Sec. 20, T140N, R99W	Ditch	Artificial	N	0.00	0.40	N	N	N
13b	Sec. 20, T140N, R99W	Basin	Natural	N	1.97	2.26	Y	N	N
13c	Sec. 21, T140N, R99W	Ditch	Artificial	N	1.37	0.37	N	N	N
13d	Sec. 21, T140N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
14	Sec. 16, T140N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
15	Sec. 16, T140N, R99W	Ditch	Artificial	N	0.00	0.12	N	N	N
16	Sec. 16, T140N, R99W	Basin	Natural	N	0.08	0.00	N	N	N
17a	Sec. 8, T140N, R99W	Slope	Natural	N	0.04	0.07	Y	N	N
17b	Sec. 9, T140N, R99W	Slope	Natural	N	0.11	0.01	Y	N	N
18	Sec. 9, T140N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
19	Sec. 9, T140N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
20	Sec. 9, T140N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
21	Sec. 5, T140N, R99W	Basin	Natural	N	0.49	0.80	Y	N	N
22	Sec. 5, T140N, R99W	Basin	Natural	N	0.29	0.00	N	N	N
23	Sec. 4, T140N, R99W	Ditch	Artificial	N	0.00	0.14	N	N	N
24	Sec. 5, T140N, R99W	Ditch	Artificial	N	0.02	0.21	N	N	N
25	Sec. 4, T140N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
26	Sec. 4, T140N, R99W	Basin	Natural	N	0.35	0.34	Y	N	N
27a	Sec. 5, T140N, R99W	Preamble	Artificial	N	0.00	0.00	N	N	N
27b	Sec. 5, T140N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
28	Sec. 4, T140N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
29a	Sec. 35, T141N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
29b	Sec. 35, T141N, R99W	Ditch	Artificial	Y	0.00	0.02	N	N	N
30a	Sec. 35, T141N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
30b	Sec. 35, T141N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
30c	Sec. 35, T141N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
30d	Sec. 35, T141N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
30e	Sec. 35, T141N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
31	Sec. 35, T141N, R99W	Basin	Natural	N	0.00	0.01	Y	N	N
32	Sec. 35, T141N, R99W	Slope	Natural	Y	0.01	0.01	Y	N	N
33a	Sec. 26, T141N, R99W	Slope	Natural	Y	0.32	0.16	Y	Y	N
33b	Sec. 26, T141N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
34	Sec. 22, T141N, R99W	Slope	Natural	Y	0.05	0.13	Y	Y	N
35a	Sec. 22, T141N, R99W	Ditch	Artificial	Y	0.06	0.41	N	Y	N
35b	Sec. 22, T141N, R99W	Slope	Natural	Y	0.35	0.01	Y	Y	N
35c	Sec. 23, T141N, R99W	Ditch	Artificial	Y	0.00	0.14	N	Y	N
35d	Sec. 23, T141N, R99W	Slope	Natural	Y	0.25	0.13	Y	Y	N
36a	Sec. 22, T141N, R99W	Ditch	Artificial	Y	0.06	0.07	N	Y	N
36b	Sec. 23, T141N, R99W	Riverine	Natural	Y	0.01	0.05	Y	Y	N
36d	Sec. 22, T141N, R99W	Riverine	Natural	Y	0.02	0.06	Y	Y	N
36e	Sec. 22, T141N, R99W	Ditch	Artificial	Y	0.25	0.15	N	Y	N
36f	Sec. 22, T141N, R99W	Slope	Natural	Y	0.01	0.00	N	N	N
36g	Sec. 23, T141N, R99W	Slope	Natural	Y	0.13	0.28	Y	Y	N
36h	Sec. 23, T141N, R99W	Ditch	Artificial	Y	0.00	0.05	N	Y	N
37	Sec. 22, T141N, R99W	Ditch	Artificial	N	0.00	0.03	N	N	N
38	Sec. 14, T141N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
39a	Sec. 15, T141N, R99W	Ditch	Artificial	N	0.03	0.01	N	N	N
39b	Sec. 15, T141N, R99W	Ditch	Artificial	N	0.04	0.01	N	N	N
40	Sec. 14, T141N, R99W	Basin	Natural	N	0.14	0.58	Y	N	N
41	Sec. 15, T141N, R99W	Preamble	Artificial	N	0.00	0.00	N	N	N
42	Sec. 15, T141N, R99W	Ditch	Artificial	N	0.08	0.01	N	N	N
43	Sec. 14, T141N, R99W	Basin	Natural	N	0.01	0.15	Y	N	N
44	Sec. 11, T141N, R99W	Slope	Natural	N	0.01	0.00	N	N	N
45	Sec. 10, T141N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
46	Sec. 10, T141N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
47	Sec. 10, T141N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
48	Sec. 11, T141N, R99W	Ditch	Artificial	N	0.00	0.03	N	N	N
49	Sec. 3, T141N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
50	Sec. 2, T141N, R99W	Basin	Natural	Y	0.01	0.02	Y	N	N
51	Sec. 2, T141N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
52a	Sec. 3, T141N, R99W	Slope	Natural	Y	0.02	0.01	Y	N	N
52b	Sec. 2, T141N, R99W	Slope	Natural	Y	0.01	0.06	Y	N	N
52c	Sec. 35, T142N, R99W	Slope	Natural	Y	0.12	0.00	N	N	N
274a	Sec. 35, T142N, R99W	Slope	Natural	Y	0.75	0.51	Y	Y	N
274b	Sec. 34, T142N, R99W	Slope	Natural	Y	0.36	0.06	Y	Y	N
274c	Sec. 34, T142N, R99W	Ditch	Artificial	Y	0.09	0.02	N	Y	N

… table continued on page F-6…

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
274d	Sec. 34, T142N, R99W	Ditch	Artificial	Y	0.02	0.00	N	N	N
272a	Sec. 27, T142N, R99W	Slope	Natural	Y	0.31	0.07	Y	Y	N
272b	Sec. 26, T142N, R99W	Slope	Natural	Y	0.35	0.40	Y	Y	N
53	Sec. 34, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
54	Sec. 34, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
55	Sec. 34, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
56	Sec. 34, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
57	Sec. 26, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
58	Sec. 26, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
59	Sec. 27, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
60a	Sec. 22, T142N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
60b	Sec. 23, T142N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
60c	Sec. 15, T142N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
60d	Sec. 14, T142N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
61	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
62	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
63	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
64	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
65	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
66	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
67	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
68	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
69	Sec. 10, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
70	Sec. 10, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
71	Sec. 10, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
72	Sec. 2, T142N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
73	Sec. 2, T142N, R99W	Slope	Natural	N	0.08	0.17	Y	N	N
74	Sec. 3, T142N, R99W	Preamble	Artificial	N	0.00	0.00	N	N	N
75	Sec. 3, T142N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
76	Sec. 3, T142N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
77	Sec. 2, T142N, R99W	Preamble	Artificial	N	0.00	0.15	N	N	N
78a	Sec. 2, T142N, R99W	Slope	Natural	Y	0.10	0.13	Y	Y	N
78b	Sec. 3, T142N, R99W	Slope	Natural	Y	0.07	0.04	Y	Y	N
273a	Sec. 34, T143N, R99W	Slope	Natural	Y	0.02	0.01	Y	Y	N
273b	Sec. 34, T143N, R99W	Slope	Natural	Y	0.13	0.68	Y	Y	N
79a	Sec. 3, T142N, R99W	Basin	Natural	Y	0.00	0.03	Y	Y	N
79b	Sec. 3, T142N, R99W	Slope	Natural	Y	0.14	0.10	Y	Y	N
79c	Sec. 34, T143N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
80	Sec. 34, T143N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
81a	Sec. 34, T143N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
81b	Sec. 34, T143N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
82	Sec. 34, T143N, R99W	Basin	Natural	Y	0.01	0.00	N	N	N

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
83	Sec. 34, T143N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
84	Sec. 27, T143N, R99W	Slope	Natural	N	0.02	0.01	Y	N	N
85	Sec. 28, T143N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
86	Sec. 28, T143N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
87	Sec. 21, T143N, R99W	Basin	Natural	N	0.00	0.02	Y	N	N
88	Sec. 21, T143N, R99W	Basin	Natural	N	0.00	0.02	Y	N	N
89	Sec. 21, T143N, R99W	Basin	Natural	N	0.00	0.07	Y	N	N
90a	Sec. 22, T143N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
90b	Sec. 22, T143N, R99W	Slope	Natural	Y	0.15	0.00	N	N	N
90c	Sec. 21, T143N, R99W	Slope	Natural	Y	0.11	0.47	Y	Y	N
91	Sec. 21, T143N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
92	Sec. 21, T143N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
93	Sec. 21, T143N, R99W	Ditch	Artificial	N	0.00	0.06	N	N	N
94a	Sec. 21, T143N, R99W	Slope	Natural	Y	0.04	0.09	Y	N	N
94b	Sec. 21, T143N, R99W	Preamble	Artificial	Y	0.00	0.00	N	N	N
95	Sec. 21, T143N, R99W	Ditch	Artificial	N	0.00	0.05	N	N	N
96	Sec. 21, T143N, R99W	Ditch	Artificial	N	0.00	0.05	N	N	N
97	Sec. 16, T143N, R99W	Ditch	Artificial	N	0.00	0.25	N	N	N
98	Sec. 16, T143N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
99a	Sec. 16, T143N, R99W	Slope	Natural	Y	0.09	0.18	Y	Y	N
99b	Sec. 15, T143N, R99W	Slope	Natural	Y	0.02	0.04	Y	Y	N
100	Sec. 16, T143N, R99W	Ditch	Artificial	N	0.01	0.01	N	N	N
101a	Sec. 9, T143N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
101b	Sec. 9, T143N, R99W	Ditch	Artificial	N	0.03	0.06	N	N	N
101c	Sec. 9, T143N, R99W	Ditch	Artificial	N	0.01	0.01	N	N	N
102	Sec. 10, T143N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
103	Sec. 9, T143N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
104	Sec. 9, T143N, R99W	Slope	Natural	Y	0.09	0.09	Y	N	N
105a	Sec. 9, T143N, R99W	Ditch	Artificial	Y	0.00	0.06	N	N	N
105b	Sec. 10, T143N, R99W	Ditch	Artificial	Y	0.03	0.02	N	N	N
106	Sec. 10, T143N, R99W	Preamble	Natural	Y	0.00	0.00	N	N	N
107	Sec. 9, T143N, R99W	Slope	Natural	N	0.01	0.09	Y	N	N
108	Sec. 9, T143N, R99W	Preamble	Artificial	N	0.40	0.56	N	N	N
109	Sec. 3, T143N, R99W	Basin	Natural	N	0.01	0.03	Y	N	N
110	Sec. 3, T143N, R99W	Basin	Natural	N	0.25	0.00	N	N	N
111	Sec. 4, T143N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
112	Sec. 4, T143N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
113	Sec. 3, T143N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
114a	Sec. 4, T143N, R99W	Slope	Natural	Y	0.01	0.04	Y	N	N
114b	Sec. 3, T143N, R99W	Slope	Natural	Y	0.03	0.01	Y	N	N
115a	Sec. 34, T144N, R99W	Slope	Natural	Y	0.01	0.00	N	N	N
115b	Sec. 34, T144N, R99W	Slope	Natural	Y	0.11	0.11	Y	Y	N

… table continued on page F-7 …

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
115c	Sec. 33, T144N, R99W	Slope	Natural	Y	0.17	0.23	Y	Y	N
116	Sec. 34, T144N, R99W	Slope	Natural	Y	0.08	0.00	N	N	N
117a	Sec. 28, T144N, R99W	Slope	Natural	Y	0.17	0.09	Y	N	N
117b	Sec. 28, T144N, R99W	Slope	Natural	Y	0.02	0.00	N	N	N
118a	Sec. 28, T144N, R99W	Slope	Natural	Y	0.08	0.40	Y	Y	N
118b	Sec. 27, T144N, R99W	Slope	Natural	Y	0.28	0.05	Y	Y	N
118c	Sec. 27, T144N, R99W	Preamble	Natural	Y	0.01	0.00	N	N	N
118d	Sec. 27, T144N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
118e	Sec. 22, T144N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
119a	Sec. 22, T144N, R99W	Preamble	Natural	Y	0.00	0.00	N	N	N
119b	Sec. 22, T144N, R99W	Slope	Natural	Y	0.07	0.03	Y	N	N
120	Sec. 22, T144N, R99W	Slope	Natural	N	0.02	0.00	N	N	N
121	Sec. 22, T144N, R99W	Ditch	Artificial	N	0.00	0.03	N	N	N
122	Sec. 22, T144N, R99W	Preamble	Artificial	Y	0.00	0.00	N	N	N
123a	Sec. 22, T144N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
123b	Sec. 22, T144N, R99W	Slope	Natural	Y	0.13	0.02	Y	N	N
124	Sec. 22, T144N, R99W	Slope	Natural	Y	0.05	0.11	Y	Y	N
125	Sec. 22, T144N, R99W	Ditch	Artificial	Y	0.00	0.22	N	Y	N
126	Sec. 22, T144N, R99W	Ditch	Artificial	Y	0.00	0.07	N	N	N
127	Sec. 15, T144N, R99W	Preamble	Artificial	Y	0.00	0.00	N	N	N
128a	Sec. 15, T144N, R99W	Ditch	Artificial	Y	0.01	0.02	N	N	N
128b	Sec. 15, T144N, R99W	Ditch	Artificial	Y	0.00	0.01	N	N	N
129	Sec. 15, T144N, R99W	Basin	Natural	Y	0.00	0.01	Y	N	N
130	Sec. 15, T144N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
131	Sec. 15, T144N, R99W	Ditch	Artificial	N	0.00	0.05	N	N	N
132	Sec. 15, T144N, R99W	Preamble	Artificial	Y	0.00	0.00	N	N	N
133	Sec. 14, T144N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
134	Sec. 14, T144N, R99W	Preamble	Artificial	N	0.00	0.00	N	N	N
135a	Sec. 14, T144N, R99W	Slope	Natural	Y	0.01	0.06	Y	Y	N
135b	Sec. 11, T144N, R99W	Slope	Natural	Y	0.03	0.19	Y	Y	N
135c	Sec. 11, T144N, R99W	Preamble	Natural	Y	0.00	0.00	N	N	N
136	Sec. 11, T144N, R99W	Ditch	Artificial	N	0.00	0.04	N	N	N
137	Sec. 11, T144N, R99W	Ditch	Artificial	N	0.00	0.03	N	N	N
138	Sec. 11, T144N, R99W	Basin	Natural	N	0.01	0.00	N	N	N
139a	Sec. 11, T144N, R99W	Ditch	Artificial	N	0.00	0.03	N	N	N
139b	Sec. 11, T144N, R99W	Slope	Natural	N	0.01	0.03	Y	N	N
140	Sec. 11, T144N, R99W	Ditch	Artificial	N	0.00	0.04	N	N	N
141	Sec. 11, T144N, R99W	Slope	Natural	N	0.02	0.05	Y	N	N
142a	Sec. 11, T144N, R99W	Slope	Natural	Y	0.02	0.06	Y	Y	N
142b	Sec. 11, T144N, R99W	Slope	Natural	Y	0.08	0.17	Y	Y	N
142c	Sec. 11, T144N, R99W	Preamble	Natural	Y	0.12	0.10	Y	Y	N
142d	Sec. 11, T144N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
142e	Sec. 11, T144N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
143	Sec. 11, T144N, R99W	Slope	Natural	Y	0.01	0.00	N	N	N
144	Sec. 11, T144N, R99W	Ditch	Artificial	N	0.00	0.03	N	N	N
145	Sec. 11, T144N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
146	Sec. 2, T144N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
147	Sec. 2, T144N, R99W	Preamble	Artificial	N	0.00	0.00	N	N	N
148	Sec. 2, T144N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
149	Sec. 2, T144N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
150	Sec. 2, T144N, R99W	Slope	Natural	Y	0.01	0.00	N	N	N
151a	Sec. 33, T145N, R98W	Slope	Natural	Y	0.01	0.02	Y	Y	N
151b	Sec. 32, T145N, R98W	Preamble	Natural	Y	0.21	0.43	Y	Y	N
152	Sec. 33, T145N, R98W	Preamble	Artificial	N	0.00	0.00	N	N	N
153a	Sec. 32, T145N, R98W	Basin	Natural	Y	0.06	0.11	Y	Y	N
153b	Sec. 33, T145N, R98W	Ditch	Artificial	Y	0.00	0.01	N	Y	N
154	Sec. 33, T145N, R98W	Ditch	Artificial	N	0.00	0.00	N	N	N
155	Sec. 33, T145N, R98W	Ditch	Artificial	N	0.00	0.00	N	N	N
156	Sec. 28, T145N, R98W	Ditch	Artificial	N	0.00	0.00	N	N	N
157	Sec. 28, T145N, R98W	Ditch	Artificial	N	0.00	0.00	N	N	N
158	Sec. 28, T145N, R98W	Ditch	Artificial	N	0.00	0.00	N	N	N
159	Sec. 28, T145N, R98W	Preamble	Artificial	N	0.00	0.00	N	N	N
160	Sec. 29, T145N, R98W	Ditch	Artificial	N	0.01	0.03	N	N	N
161	Sec. 29, T145N, R98W	Slope	Natural	Y	0.03	0.10	Y	Y	N
162	Sec. 29, T145N, R98W	Slope	Natural	Y	0.00	0.00	N	N	N
163	Sec. 29, T145N, R98W	Ditch	Artificial	N	0.00	0.06	N	N	N
164a	Sec. 29, T145N, R98W	Slope	Natural	Y	0.03	0.22	Y	Y	N
164b	Sec. 29, T145N, R98W	Slope	Natural	Y	0.01	0.01	Y	Y	N
165	Sec. 29, T145N, R98W	Preamble	Artificial	N	0.00	0.00	N	N	N
166	Sec. 29, T145N, R98W	Slope	Natural	Y	0.01	0.00	N	N	N
167	Sec. 29, T145N, R98W	Slope	Natural	Y	0.00	0.05	Y	N	N
168	Sec. 29, T145N, R98W	Ditch	Artificial	N	0.00	0.03	N	N	N
169	Sec. 29, T145N, R98W	Preamble	Artificial	N	0.00	0.00	N	N	N
170	Sec. 29, T145N, R98W	Preamble	Artificial	N	0.00	0.00	N	N	N
171	Sec. 29, T145N, R98W	Ditch	Artificial	N	0.00	0.05	N	N	N
172	Sec. 29, T145N, R98W	Ditch	Artificial	N	0.00	0.03	N	N	N
173	Sec. 20, T145N, R98W	Ditch	Artificial	N	0.00	0.05	N	N	N
174	Sec. 19, T145N, R98W	Ditch	Artificial	N	0.00	0.04	N	N	N
175	Sec. 19, T145N, R98W	Ditch	Artificial	N	0.00	0.04	N	N	N
176	Sec. 19, T145N, R98W	Slope	Natural	Y	0.01	0.06	Y	N	N
177	Sec. 19, T145N, R98W	Slope	Natural	Y	0.01	0.17	Y	Y	N
178	Sec. 19, T145N, R98W	Slope	Natural	Y	0.01	0.02	Y	N	N
179	Sec. 19, T145N, R98W	Slope	Natural	Y	0.00	0.00	N	N	N
180	Sec. 18, T145N, R98W	Preamble	Artificial	Y	0.32	0.15	N	Y	N

… table continued on page F-8 …

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
181	Sec. 13, T145N, R99W	Ditch	Artificial	N	0.01	0.01	N	N	N
182	Sec. 13, T145N, R99W	Preamble	Natural	N	0.10	0.05	Y	N	N
183a	Sec. 13, T145N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
183b	Sec. 13, T145N, R99W	Preamble	Natural	N	0.00	0.00	N	N	N
184	Sec. 13, T145N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
185	Sec. 13, T145N, R99W	Slope	Natural	N	0.01	0.00	N	N	N
186	Sec. 13, T145N, R99W	Slope	Natural	N	0.01	0.03	Y	N	N
187a	Sec. 12, T145N, R99W	Ditch	Artificial	Y	0.06	0.07	N	Y	N
187b	Sec. 12, T145N, R99W	Slope	Natural	Y	0.37	0.19	Y	Y	N
187c	Sec. 12, T145N, R99W	Ditch	Artificial	Y	0.02	0.06	N	Y	N
187d	Sec. 12, T145N, R99W	Slope	Natural	Y	0.09	0.23	Y	Y	N
187e	Sec. 12, T145N, R99W	Preamble	Natural	Y	0.01	0.00	N	N	N
187f	Sec. 12, T145N, R99W	Slope	Natural	Y	0.04	0.03	Y	Y	N
187g	Sec. 12, T145N, R99W	Ditch	Artificial	Y	0.07	1.17	N	Y	N
188	Sec. 12, T145N, R99W	Ditch	Artificial	N	0.04	0.13	N	N	N
189	Sec. 12, T145N, R99W	Preamble	Artificial	Y	0.05	0.00	N	N	N
190	Sec. 11, T145N, R99W	Ditch	Artificial	N	0.00	0.03	N	N	N
191	Sec. 2, T145N, R99W	Ditch	Artificial	N	0.06	0.09	N	N	N
192	Sec. 2, T145N, R99W	Preamble	Artificial	N	0.00	0.00	N	N	N
193	Sec. 2, T145N, R99W	Preamble	Artificial	N	0.00	0.00	N	N	N
194	Sec. 1, T145N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
195	Sec. 1, T145N, R99W	Basin	Natural	N	0.01	0.08	Y	N	N
196	Sec. 2, T145N, R99W	Basin	Natural	N	0.02	0.00	N	N	N
197	Sec. 23, T146N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
198a	Sec. 23, T146N, R99W	Slope	Natural	Y	0.01	0.05	Y	Y	N
198b	Sec. 24, T146N, R99W	Preamble	Natural	Y	0.01	0.15	Y	Y	N
199	Sec. 24, T146N, R99W	Preamble	Artificial	Y	0.01	0.00	N	N	N
200	Sec. 24, T146N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
201a	Sec. 13, T146N, R99W	Preamble	Natural	Y	0.00	0.00	N	N	N
201b	Sec. 13, T146N, R99W	Slope	Natural	Y	0.08	0.32	Y	Y	N
201c	Sec. 14, T146N, R99W	Preamble	Natural	Y	0.00	0.00	N	N	N
201d	Sec. 14, T146N, R99W	Preamble	Natural	Y	0.00	0.00	N	N	N
202a	Sec. 14, T146N, R99W	Ditch	Artificial	Y	0.00	0.10	N	Y	N
202b	Sec. 14, T146N, R99W	Slope	Natural	Y	0.16	0.20	Y	Y	N
202c	Sec. 13, T146N, R99W	Slope	Natural	Y	0.13	0.00	N	N	N
202d	Sec. 13, T146N, R99W	Preamble	Natural	Y	0.10	0.00	N	N	N
203	Sec. 13, T146N, R99W	Ditch	Artificial	N	0.06	0.06	N	N	N
204	Sec. 14, T146N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
205a	Sec. 2, T146N, R99W	Slope	Natural	Y	0.02	0.00	N	N	N
205b	Sec. 35, T147N, R99W	Slope	Natural	Y	0.11	0.27	Y	Y	N
205c	Sec. 36, T147N, R99W	Slope	Natural	Y	0.33	0.04	Y	Y	N
205d	Sec. 36, T147N, R99W	Ditch	Artificial	Y	0.00	0.00	N	N	N
206a	Sec. 35, T147N, R99W	Slope	Natural	Y	0.11	0.49	Y	Y	N
206b	Sec. 36, T147N, R99W	Slope	Natural	Y	0.19	0.00	N	N	N
206c	Sec. 36, T147N, R99W	Ditch	Artificial	Y	0.09	0.06	N	Y	N
207a	Sec. 36, T147N, R99W	Ditch	Artificial	N	0.00	0.14	N	N	N
207b	Sec. 36, T147N, R99W	Ditch	Artificial	N	0.00	0.11	N	N	N
207c	Sec. 36, T147N, R99W	Ditch	Artificial	N	0.00	0.29	N	N	N
208a	Sec. 35, T147N, R99W	Ditch	Artificial	N	0.00	0.05	N	N	N
208b	Sec. 35, T147N, R99W	Ditch	Artificial	N	0.00	0.52	N	N	N
209	Sec. 36, T147N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
210a	Sec. 26, T147N, R99W	Slope	Natural	Y	0.24	0.00	N	N	N
210b	Sec. 25, T147N, R99W	Preamble	Natural	Y	1.03	0.00	N	N	N
211a	Sec. 25, T147N, R99W	Preamble	Natural	Y	0.96	0.17	Y	Y	N
211b	Sec. 25, T147N, R99W	Ditch	Artificial	Y	0.02	0.29	N	Y	N
211c	Sec. 25, T147N, R99W	Slope	Natural	Y	0.02	0.01	Y	Y	N
211d	Sec. 25, T147N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
212a	Sec. 25, T147N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
212b	Sec. 25, T147N, R99W	Slope	Natural	N	0.07	0.01	Y	N	N
213	Sec. 24, T147N, R99W	Ditch	Artificial	N	0.00	0.11	N	N	N
214	Sec. 24, T147N, R99W	Ditch	Artificial	N	0.00	0.05	N	N	N
215a	Sec. 24, T147N, R99W	Slope	Natural	Y	0.20	0.02	Y	Y	N
215b	Sec. 24, T147N, R99W	Slope	Natural	Y	0.13	0.14	Y	Y	N
216	Sec. 24, T147N, R99W	Slope	Natural	N	0.10	0.00	N	N	N
217	Sec. 24, T147N, R99W	Slope	Natural	N	0.02	0.05	Y	N	N
218	Sec. 13, T147N, R99W	Slope	Natural	Y	0.05	0.08	Y	N	N
219	Sec. 13, T147N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
220	Sec. 13, T147N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
221	Sec. 13, T147N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
222	Sec. 13, T147N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
223a	Sec. 12, T147N, R99W	Slope	Natural	Y	0.48	0.00	N	N	N
223c	Sec. 12, T147N, R99W	Slope	Natural	Y	0.48	0.00	N	N	N
223e	Sec. 2, T147N, R99W	Fringe	Natural	Y	0.09	0.00	N	N	N
224	Sec. 12, T147N, R99W	Preamble	Artificial	N	0.93	0.00	N	N	N
225	Sec. 12, T147N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
226	Sec. 12, T147N, R99W	Ditch	Artificial	N	0.00	0.04	N	N	N
227	Sec. 12, T147N, R99W	Ditch	Artificial	N	0.00	0.04	N	N	N
228	Sec. 1, T147N, R99W	Preamble	Artificial	N	0.19	0.60	N	N	N
229	Sec. 35, T148N, R99W	Riverine	Natural	Y	0.00	0.00	N	N	N
230a	Sec. 35, T148N, R99W	Riverine	Natural	Y	0.00	0.00	N	N	N
230c	Sec. 35, T148N, R99W	Riverine	Natural	Y	0.00	0.00	N	N	N
231	Sec. 35, T148N, R99W	Preamble	Artificial	N	0.05	0.02	N	N	N
232	Sec. 35, T148N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
233	Sec. 26, T148N, R99W	Slope	Natural	N	0.05	0.03	Y	N	N

… table continued on page F-9 …

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
234	Sec. 26, T148N, R99W	Slope	Artificial	N	0.01	0.00	N	N	N
235	Sec. 26, T148N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
236	Sec. 26, T148N, R99W	Slope	Natural	Y	0.19	0.03	Y	N	N
237	Sec. 26, T148N, R99W	Slope	Natural	Y	0.01	0.01	Y	N	N
238	Sec. 26, T148N, R99W	Slope	Natural	Y	0.08	0.00	N	N	N
239	Sec. 26, T148N, R99W	Ditch	Artificial	Y	0.02	0.00	N	N	N
240	Sec. 26, T148N, R99W	Slope	Natural	N	0.01	0.00	N	N	N
241	Sec. 26, T148N, R99W	Slope	Natural	Y	0.12	0.00	N	N	N
242	Sec. 26, T148N, R99W	Slope	Natural	Y	0.01	0.00	N	N	N
243	Sec. 26, T148N, R99W	Ditch	Artificial	N	0.00	0.27	N	N	N
244	Sec. 26, T148N, R99W	Slope	Natural	N	0.01	0.00	N	N	N
245	Sec. 26, T148N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
246	Sec. 26, T148N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
247	Sec. 26, T148N, R99W	Ditch	Artificial	N	0.00	0.05	N	N	N
248	Sec. 22, T148N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
249	Sec. 23, T148N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
250a	Sec. 23, T148N, R99W	Slope	Natural	Y	0.03	0.17	Y	Y	N
250b	Sec. 22, T148N, R99W	Slope	Natural	Y	0.01	0.05	Y	Y	N
251	Sec. 23, T148N, R99W	Slope	Natural	N	0.00	0.07	Y	N	N
252a	Sec. 22, T148N, R99W	Slope	Natural	Y	0.06	0.14	Y	Y	N
252b	Sec. 23, T148N, R99W	Slope	Natural	Y	0.02	0.35	Y	Y	N
253a	Sec. 22, T148N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
253b	Sec. 15, T148N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
254	Sec. 23, T148N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
255	Sec. 14, T148N, R99W	Slope	Natural	Y	0.06	0.25	Y	Y	N
256	Sec. 14, T148N, R99W	Slope	Natural	N	0.01	0.02	Y	N	N
257	Sec. 14, T148N, R99W	Ditch	Artificial	N	0.00	0.12	N	N	N
258	Sec. 15, T148N, R99W	Slope	Natural	Y	0.11	0.01	Y	N	N
259a	Sec. 36, T149N, R99W	Slope	Natural	Y	0.17	0.06	Y	Y	N
259b	Sec. 36, T149N, R99W	Slope	Natural	Y	0.06	0.24	Y	Y	N
260	Sec. 36, T149N, R99W	Ditch	Artificial	N	0.00	0.09	N	N	N
261	Sec. 36, T149N, R99W	Ditch	Artificial	N	0.00	0.04	N	N	N
262	Sec. 31, T149N, R98W	Slope	Natural	Y	0.03	0.10	Y	Y	N
263	Sec. 30, T149N, R98W	Ditch	Artificial	N	0.00	0.01	N	N	N
264	Sec. 25, T149N, R99W	Ditch	Artificial	N	0.06	0.22	N	N	N
265	Sec. 30, T149N, R98W	Basin	Natural	N	0.12	0.43	Y	N	N
266	Sec. 24, T149N, R99W	Ditch	Artificial	N	0.00	0.28	N	N	N
267a	Sec. 24, T149N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
267b	Sec. 24, T149N, R99W	Slope	Natural	Y	0.01	0.01	Y	Y	N
267c	Sec. 24, T149N, R99W	Slope	Natural	Y	0.14	0.33	Y	Y	N
267d	Sec. 24, T149N, R99W	Slope	Natural	Y	0.11	0.03	Y	Y	N
267e	Sec. 19, T149N, R98W	Ditch	Artificial	Y	0.03	0.01	N	Y	N

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
268	Sec. 13, T149N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
269	Sec. 12, T149N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
270	Sec. 7, T149N, R98W	Ditch	Artificial	N	0.03	0.05	N	N	N
271	Sec. 12, T149N, R99W	Ditch	Artificial	N	0.03	0.00	N	N	N
275	Sec. 22, T141N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
276	Sec. 14, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
277	Sec. 14, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
278	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
279	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
280	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
281	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
282	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
283	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
284	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
285	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
286	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
287	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
288	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
289	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
290	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
291	Sec. 11, T142N, R99W	Basin	Natural	Y	0.01	0.00	N	N	N
292	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
293	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
294	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
295	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
296	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
297	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
298	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
299	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
300	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
301	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
302	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
303	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
304	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
305	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
306	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
307	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
308	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
309	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
310	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
311	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
312	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N

… table continued on page F-10 …

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
313	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
314	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
315	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
316	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
317	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
318	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
319	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
320	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
321	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
322	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
323	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
324	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
325	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
326	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
327	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
Total					**21.82**	**26.85**			

Table F.2. Alternative B (without options) Other Waters Impacts

OW Number	Location	OW Type	OW Size		Feature	USACE Jurisdictional OW	OW Impacts				OW Mitigation Required		
			Acre(s)	Linear Feet			Acre(s)		Linear Feet		EO 11990	USACE	USFWS
							Temp.	Perm.	Temp.	Perm.			
36c	Sec. 22, T141N, R99W	Riverine	0.66	1,242	Natural	Y	0.03	0.15	49	270	N	N	N
223b	Sec. 1, 2, 12, T147N, R99W	Riverine	0.2	1,435	Natural	Y	0.00	0.00	0	0	N	N	N
223d	Sec. 12, T147N, R99W	Riverine	1.37	9,056	Natural	Y	0.34	0.00	2,639	0	N	N	N
230b	Sec. 35, T148N, R99W	Riverine	10.94	2,001	Natural	Y	0.00	0.00	0	0	N	N	N
267f	Sec. 18, 19, T149N, R98W and Sec. 13, T149N, R99W	Riverine	0.22	905	Natural	Y	0.04	0.02	183	47	N	N	N
267g	Sec. 13, T149N, R99W	Riverine	0.16	850	Natural	Y	0.02	0.04	65	135	N	N	N
Total							**0.43**	**0.21**	**2,936**	**452**			

F.1.2. Alternative C (without options) Wetland and Other Waters Impact Tables

Table F.3. Alternative C (without options) Wetland Impacts

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
1	Sec. 33, T140N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
2	Sec. 33, T140N, R99W	Basin	Natural	N	0.05	0.00	N	N	N
3	Sec. 33, T140N, R99W	Ditch	Artificial	N	0.00	0.06	N	N	N
4	Sec. 29, T140N, R99W	Ditch	Artificial	N	0.00	0.07	N	N	N
5	Sec. 29, T140N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
6	Sec. 28, T140N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
7	Sec. 28, T140N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
8	Sec. 29, T140N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
9	Sec. 20, T140N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
10	Sec. 20, T140N, R99W	Ditch	Artificial	N	0.00	0.18	N	N	N
11	Sec. 20, T140N, R99W	Basin	Natural	N	0.09	0.00	N	N	N
12	Sec. 21, T140N, R99W	Ditch	Artificial	N	0.00	0.04	N	N	N
13a	Sec. 20, T140N, R99W	Ditch	Artificial	N	0.00	0.40	N	N	N
13b	Sec. 20, T140N, R99W	Basin	Natural	N	1.79	0.62	Y	N	N
13c	Sec. 21, T140N, R99W	Ditch	Artificial	N	0.90	1.20	N	N	N
13d	Sec. 21, T140N, R99W	Basin	Natural	N	0.01	0.00	N	N	N
14	Sec. 16, T140N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
15	Sec. 16, T140N, R99W	Ditch	Artificial	N	0.00	0.12	N	N	N
16	Sec. 16, T140N, R99W	Basin	Natural	N	0.04	0.04	Y	N	N
17a	Sec. 8, T140N, R99W	Slope	Natural	N	0.04	0.02	Y	N	N
17b	Sec. 9, T140N, R99W	Slope	Natural	N	0.03	0.02	Y	N	N
18	Sec. 9, T140N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
19	Sec. 9, T140N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
20	Sec. 9, T140N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
21	Sec. 5, T140N, R99W	Basin	Natural	N	0.42	0.07	Y	N	N
22	Sec. 5, T140N, R99W	Basin	Natural	N	0.09	0.00	N	N	N
23	Sec. 4, T140N, R99W	Ditch	Artificial	N	0.00	0.14	N	N	N
24	Sec. 5, T140N, R99W	Ditch	Artificial	N	0.00	0.23	N	N	N
25	Sec. 4, T140N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
26	Sec. 4, T140N, R99W	Basin	Natural	N	0.32	0.04	Y	N	N
27a	Sec. 5, T140N, R99W	Preamble	Artificial	N	0.00	0.00	N	N	N
27b	Sec. 5, T140N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
28	Sec. 4, T140N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
29a	Sec. 35, T141N, R99W	Basin	Natural	N	0.05	0.00	Y	N	N
29b	Sec. 35, T141N, R99W	Ditch	Artificial	Y	0.01	0.01	N	N	N
30a	Sec. 35, T141N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
30b	Sec. 35, T141N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
30c	Sec. 35, T141N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
30d	Sec. 35, T141N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
30e	Sec. 35, T141N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
31	Sec. 35, T141N, R99W	Basin	Natural	N	0.01	0.00	N	N	N
32	Sec. 35, T141N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
33a	Sec. 26, T141N, R99W	Slope	Natural	Y	0.06	0.00	N	N	N
33b	Sec. 26, T141N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
34	Sec. 22, T141N, R99W	Slope	Natural	Y	0.05	0.09	Y	N	N
35a	Sec. 22, T141N, R99W	Ditch	Artificial	Y	0.01	0.46	N	Y	N
35b	Sec. 22, T141N, R99W	Slope	Natural	Y	0.56	0.02	Y	Y	N
35c	Sec. 23, T141N, R99W	Ditch	Artificial	Y	0.07	0.07	N	Y	N
35d	Sec. 23, T141N, R99W	Slope	Natural	Y	0.24	0.00	N	N	N
36a	Sec. 22, T141N, R99W	Ditch	Artificial	Y	0.00	0.13	N	Y	N
36b	Sec. 23, T141N, R99W	Riverine	Natural	Y	0.04	0.04	Y	Y	N
36d	Sec. 22, T141N, R99W	Riverine	Natural	Y	0.03	0.05	Y	Y	N
36e	Sec. 22, T141N, R99W	Ditch	Artificial	Y	0.06	0.34	N	Y	N
36f	Sec. 22, T141N, R99W	Slope	Natural	Y	0.15	0.00	N	N	N
36g	Sec. 23, T141N, R99W	Slope	Natural	Y	0.20	0.00	N	N	N
36h	Sec. 23, T141N, R99W	Ditch	Artificial	Y	0.02	0.04	N	Y	N
37	Sec. 22, T141N, R99W	Ditch	Artificial	N	0.00	0.03	N	N	N
38	Sec. 14, T141N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
39a	Sec. 15, T141N, R99W	Ditch	Artificial	N	0.01	0.03	N	N	N
39b	Sec. 15, T141N, R99W	Ditch	Artificial	N	0.06	0.06	N	N	N
40	Sec. 14, T141N, R99W	Basin	Natural	N	0.14	0.07	Y	N	N
41	Sec. 15, T141N, R99W	Preamble	Artificial	N	0.00	0.00	N	N	N
42	Sec. 15, T141N, R99W	Ditch	Artificial	N	0.00	0.09	N	N	N
43	Sec. 14, T141N, R99W	Basin	Natural	N	0.05	0.00	N	N	N
44	Sec. 11, T141N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
45	Sec. 10, T141N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
46	Sec. 10, T141N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
47	Sec. 10, T141N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
48	Sec. 11, T141N, R99W	Ditch	Artificial	N	0.00	0.03	N	N	N
49	Sec. 3, T141N, R99W	Slope	Natural	Y	0.03	0.00	N	N	N
50	Sec. 2, T141N, R99W	Basin	Natural	Y	0.01	0.00	N	N	N
51	Sec. 2, T141N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
52a	Sec. 3, T141N, R99W	Slope	Natural	Y	0.01	0.03	Y	N	N
52b	Sec. 2, T141N, R99W	Slope	Natural	Y	0.01	0.04	Y	N	N
52c	Sec. 35, T142N, R99W	Slope	Natural	Y	0.01	0.00	N	N	N
274a	Sec. 35, T142N, R99W	Slope	Natural	Y	0.84	0.11	Y	Y	N
274b	Sec. 34, T142N, R99W	Slope	Natural	Y	0.33	0.15	Y	Y	N
274c	Sec. 34, T142N, R99W	Ditch	Artificial	Y	0.01	0.10	N	Y	N

... table continued on page F-13 ...

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
274d	Sec. 34, T142N, R99W	Ditch	Artificial	Y	0.01	0.01	N	Y	N
272a	Sec. 27, T142N, R99W	Slope	Natural	Y	0.39	0.13	Y	Y	N
272b	Sec. 26, T142N, R99W	Slope	Natural	Y	0.62	0.12	Y	Y	N
53	Sec. 34, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
54	Sec. 34, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
55	Sec. 34, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
56	Sec. 34, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
57	Sec. 26, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
58	Sec. 26, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
59	Sec. 27, T142N, R99W	Basin	Natural	N	0.05	0.00	N	N	N
60a	Sec. 22, T142N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
60b	Sec. 23, T142N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
60c	Sec. 15, T142N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
60d	Sec. 14, T142N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
61	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
62	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
63	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
64	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
65	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
66	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
67	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
68	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
69	Sec. 10, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
70	Sec. 10, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
71	Sec. 10, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
72	Sec. 2, T142N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
73	Sec. 2, T142N, R99W	Slope	Natural	N	0.02	0.02	Y	N	N
74	Sec. 3, T142N, R99W	Preamble	Artificial	N	0.00	0.00	N	N	N
75	Sec. 3, T142N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
76	Sec. 3, T142N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
77	Sec. 2, T142N, R99W	Preamble	Artificial	N	0.02	0.04	N	N	N
78a	Sec. 2, T142N, R99W	Slope	Natural	Y	0.01	0.08	Y	Y	N
78b	Sec. 3, T142N, R99W	Slope	Natural	Y	0.03	0.04	Y	Y	N
273a	Sec. 34, T143N, R99W	Slope	Natural	Y	0.11	0.06	Y	Y	N
273b	Sec. 34, T143N, R99W	Slope	Natural	Y	0.09	0.19	Y	Y	N
79a	Sec. 3, T142N, R99W	Basin	Natural	Y	0.00	0.03	Y	N	N
79b	Sec. 3, T142N, R99W	Slope	Natural	Y	0.05	0.01	Y	N	N
79c	Sec. 34, T143N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
80	Sec. 34, T143N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
81a	Sec. 34, T143N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
81b	Sec. 34, T143N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
82	Sec. 34, T143N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
83	Sec. 34, T143N, R99W	Slope	Natural	N	0.14	0.00	N	N	N
84	Sec. 27, T143N, R99W	Slope	Natural	N	0.04	0.03	Y	N	N
85	Sec. 28, T143N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
86	Sec. 28, T143N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
87	Sec. 21, T143N, R99W	Basin	Natural	N	0.02	0.00	N	N	N
88	Sec. 21, T143N, R99W	Basin	Natural	N	0.02	0.00	N	N	N
89	Sec. 21, T143N, R99W	Basin	Natural	N	0.04	0.01	Y	N	N
90a	Sec. 22, T143N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
90b	Sec. 22, T143N, R99W	Slope	Natural	Y	0.10	0.05	Y	Y	N
90c	Sec. 21, T143N, R99W	Slope	Natural	Y	0.26	0.06	Y	Y	N
91	Sec. 21, T143N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
92	Sec. 21, T143N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
93	Sec. 21, T143N, R99W	Ditch	Artificial	N	0.00	0.06	N	N	N
94a	Sec. 21, T143N, R99W	Slope	Natural	Y	0.07	0.00	N	N	N
94b	Sec. 21, T143N, R99W	Preamble	Artificial	Y	0.00	0.00	N	N	N
95	Sec. 21, T143N, R99W	Ditch	Artificial	N	0.00	0.05	N	N	N
96	Sec. 21, T143N, R99W	Ditch	Artificial	N	0.00	0.05	N	N	N
97	Sec. 16, T143N, R99W	Ditch	Artificial	N	0.00	0.25	N	N	N
98	Sec. 16, T143N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
99a	Sec. 16, T143N, R99W	Slope	Natural	Y	0.10	0.08	Y	Y	N
99b	Sec. 15, T143N, R99W	Slope	Natural	Y	0.04	0.05	Y	Y	N
100	Sec. 16, T143N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
101a	Sec. 9, T143N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
101b	Sec. 9, T143N, R99W	Ditch	Artificial	N	0.03	0.02	N	N	N
101c	Sec. 9, T143N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
102	Sec. 10, T143N, R99W	Slope	Natural	N	0.01	0.00	N	N	N
103	Sec. 9, T143N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
104	Sec. 9, T143N, R99W	Slope	Natural	Y	0.05	0.00	N	N	N
105a	Sec. 9, T143N, R99W	Ditch	Artificial	Y	0.01	0.06	N	Y	N
105b	Sec. 10, T143N, R99W	Ditch	Artificial	Y	0.03	0.04	N	Y	N
106	Sec. 10, T143N, R99W	Preamble	Natural	Y	0.05	0.00	N	N	N
107	Sec. 9, T143N, R99W	Slope	Natural	N	0.08	0.00	N	N	N
108	Sec. 9, T143N, R99W	Preamble	Artificial	N	0.37	0.02	N	N	N
109	Sec. 3, T143N, R99W	Basin	Natural	N	0.03	0.01	Y	N	N
110	Sec. 3, T143N, R99W	Basin	Natural	N	0.48	0.10	Y	N	N
111	Sec. 4, T143N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
112	Sec. 4, T143N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
113	Sec. 3, T143N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
114a	Sec. 4, T143N, R99W	Slope	Natural	Y	0.01	0.03	Y	N	N
114b	Sec. 3, T143N, R99W	Slope	Natural	Y	0.04	0.04	Y	N	N
115a	Sec. 34, T144N, R99W	Slope	Natural	Y	0.01	0.00	N	N	N
115b	Sec. 34, T144N, R99W	Slope	Natural	Y	0.04	0.20	Y	Y	N

… table continued on page F-14 …

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
115c	Sec. 33, T144N, R99W	Slope	Natural	Y	0.03	0.08	Y	Y	N
116	Sec. 34, T144N, R99W	Slope	Natural	Y	0.14	0.10	Y	Y	N
117a	Sec. 28, T144N, R99W	Slope	Natural	Y	0.01	0.00	N	N	N
117b	Sec. 28, T144N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
118a	Sec. 28, T144N, R99W	Slope	Natural	Y	0.09	0.14	Y	Y	N
118b	Sec. 27, T144N, R99W	Slope	Natural	Y	0.22	0.18	Y	Y	N
118c	Sec. 27, T144N, R99W	Preamble	Natural	Y	0.01	0.00	N	N	N
118d	Sec. 27, T144N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
118e	Sec. 22, T144N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
119a	Sec. 22, T144N, R99W	Preamble	Natural	Y	0.00	0.00	N	N	N
119b	Sec. 22, T144N, R99W	Slope	Natural	Y	0.08	0.10	Y	Y	N
120	Sec. 22, T144N, R99W	Slope	Natural	N	0.02	0.01	Y	N	N
121	Sec. 22, T144N, R99W	Ditch	Artificial	N	0.00	0.00	N	N	N
122	Sec. 22, T144N, R99W	Preamble	Artificial	Y	0.00	0.00	N	N	N
123a	Sec. 22, T144N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
123b	Sec. 22, T144N, R99W	Slope	Natural	Y	0.07	0.08	Y	N	N
124	Sec. 22, T144N, R99W	Slope	Natural	Y	0.03	0.01	Y	N	N
125	Sec. 22, T144N, R99W	Ditch	Artificial	Y	0.00	0.22	N	Y	N
126	Sec. 22, T144N, R99W	Ditch	Artificial	Y	0.00	0.07	N	N	N
127	Sec. 15, T144N, R99W	Preamble	Artificial	Y	0.00	0.00	N	N	N
128a	Sec. 15, T144N, R99W	Ditch	Artificial	Y	0.00	0.03	N	N	N
128b	Sec. 15, T144N, R99W	Ditch	Artificial	Y	0.00	0.01	N	N	N
129	Sec. 15, T144N, R99W	Basin	Natural	Y	0.01	0.01	Y	N	N
130	Sec. 15, T144N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
131	Sec. 15, T144N, R99W	Ditch	Artificial	N	0.00	0.05	N	N	N
132	Sec. 15, T144N, R99W	Preamble	Artificial	Y	0.00	0.00	N	N	N
133	Sec. 14, T144N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
134	Sec. 14, T144N, R99W	Preamble	Artificial	N	0.00	0.00	N	N	N
135a	Sec. 14, T144N, R99W	Slope	Natural	Y	0.03	0.08	Y	Y	N
135b	Sec. 11, T144N, R99W	Slope	Natural	Y	0.06	0.09	Y	Y	N
135c	Sec. 11, T144N, R99W	Preamble	Natural	Y	0.00	0.00	N	N	N
136	Sec. 11, T144N, R99W	Ditch	Artificial	N	0.00	0.04	N	N	N
137	Sec. 11, T144N, R99W	Ditch	Artificial	N	0.00	0.03	N	N	N
138	Sec. 11, T144N, R99W	Basin	Natural	N	0.01	0.00	N	N	N
139a	Sec. 11, T144N, R99W	Ditch	Artificial	N	0.00	0.03	N	N	N
139b	Sec. 11, T144N, R99W	Slope	Natural	N	0.02	0.03	Y	N	N
140	Sec. 11, T144N, R99W	Ditch	Artificial	N	0.00	0.04	N	N	N
141	Sec. 11, T144N, R99W	Slope	Natural	N	0.03	0.01	Y	N	N
142a	Sec. 11, T144N, R99W	Slope	Natural	Y	0.04	0.08	Y	Y	N
142b	Sec. 11, T144N, R99W	Slope	Natural	Y	0.01	0.11	Y	Y	N
142c	Sec. 11, T144N, R99W	Preamble	Natural	Y	0.02	0.01	Y	Y	N
142d	Sec. 11, T144N, R99W	Slope	Natural	Y	0.04	0.01	Y	Y	N
142e	Sec. 11, T144N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
143	Sec. 11, T144N, R99W	Slope	Natural	Y	0.01	0.01	Y	N	N
144	Sec. 11, T144N, R99W	Ditch	Artificial	N	0.00	0.03	N	N	N
145	Sec. 11, T144N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
146	Sec. 2, T144N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
147	Sec. 2, T144N, R99W	Preamble	Artificial	N	0.00	0.00	N	N	N
148	Sec. 2, T144N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
149	Sec. 2, T144N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
150	Sec. 2, T144N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
151a	Sec. 33, T145N, R98W	Slope	Natural	Y	0.03	0.05	Y	Y	N
151b	Sec. 32, T145N, R98W	Preamble	Natural	Y	0.14	0.22	Y	Y	N
152	Sec. 33, T145N, R98W	Preamble	Artificial	N	0.00	0.00	N	N	N
153a	Sec. 32, T145N, R98W	Basin	Natural	Y	0.03	0.05	Y	N	N
153b	Sec. 33, T145N, R98W	Ditch	Artificial	Y	0.00	0.01	N	N	N
154	Sec. 33, T145N, R98W	Ditch	Artificial	N	0.00	0.00	N	N	N
155	Sec. 33, T145N, R98W	Ditch	Artificial	N	0.00	0.00	N	N	N
156	Sec. 28, T145N, R98W	Ditch	Artificial	N	0.00	0.00	N	N	N
157	Sec. 28, T145N, R98W	Ditch	Artificial	N	0.00	0.00	N	N	N
158	Sec. 28, T145N, R98W	Ditch	Artificial	N	0.00	0.00	N	N	N
159	Sec. 28, T145N, R98W	Preamble	Artificial	N	0.04	0.00	N	N	N
160	Sec. 29, T145N, R98W	Ditch	Artificial	N	0.00	0.03	N	N	N
161	Sec. 29, T145N, R98W	Slope	Natural	Y	0.03	0.03	Y	N	N
162	Sec. 29, T145N, R98W	Slope	Natural	Y	0.00	0.00	N	N	N
163	Sec. 29, T145N, R98W	Ditch	Artificial	N	0.00	0.06	N	N	N
164a	Sec. 29, T145N, R98W	Slope	Natural	Y	0.06	0.03	Y	N	N
164b	Sec. 29, T145N, R98W	Slope	Natural	Y	0.00	0.02	Y	N	N
165	Sec. 29, T145N, R98W	Preamble	Artificial	N	0.00	0.00	N	N	N
166	Sec. 29, T145N, R98W	Slope	Natural	Y	0.01	0.01	Y	N	N
167	Sec. 29, T145N, R98W	Slope	Natural	Y	0.01	0.05	Y	N	N
168	Sec. 29, T145N, R98W	Ditch	Artificial	N	0.00	0.03	N	N	N
169	Sec. 29, T145N, R98W	Preamble	Artificial	N	0.00	0.00	N	N	N
170	Sec. 29, T145N, R98W	Preamble	Artificial	N	0.00	0.00	N	N	N
171	Sec. 29, T145N, R98W	Ditch	Artificial	N	0.00	0.05	N	N	N
172	Sec. 29, T145N, R98W	Ditch	Artificial	N	0.00	0.03	N	N	N
173	Sec. 20, T145N, R98W	Ditch	Artificial	N	0.00	0.05	N	N	N
174	Sec. 19, T145N, R98W	Ditch	Artificial	N	0.00	0.04	N	N	N
175	Sec. 19, T145N, R98W	Ditch	Artificial	N	0.00	0.04	N	N	N
176	Sec. 19, T145N, R98W	Slope	Natural	Y	0.01	0.04	Y	N	N
177	Sec. 19, T145N, R98W	Slope	Natural	Y	0.07	0.01	Y	N	N
178	Sec. 19, T145N, R98W	Slope	Natural	Y	0.01	0.01	Y	N	N
179	Sec. 19, T145N, R98W	Slope	Natural	Y	0.00	0.00	N	N	N
180	Sec. 18, T145N, R98W	Preamble	Artificial	Y	0.03	0.01	N	N	N

… table continued on page F-15 …

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
181	Sec. 13, T145N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
182	Sec. 13, T145N, R99W	Preamble	Natural	N	0.00	0.00	N	N	N
183a	Sec. 13, T145N, R99W	Slope	Natural	N	0.01	0.01	Y	N	N
183b	Sec. 13, T145N, R99W	Preamble	Natural	N	0.00	0.00	N	N	N
184	Sec. 13, T145N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
185	Sec. 13, T145N, R99W	Slope	Natural	N	0.01	0.01	Y	N	N
186	Sec. 13, T145N, R99W	Slope	Natural	N	0.01	0.02	Y	N	N
187a	Sec. 12, T145N, R99W	Ditch	Artificial	Y	0.01	0.13	N	Y	N
187b	Sec. 12, T145N, R99W	Slope	Natural	Y	0.38	0.21	Y	Y	N
187c	Sec. 12, T145N, R99W	Ditch	Artificial	Y	0.01	0.08	N	Y	N
187d	Sec. 12, T145N, R99W	Slope	Natural	Y	0.05	0.07	Y	Y	N
187e	Sec. 12, T145N, R99W	Preamble	Natural	Y	0.01	0.00	N	N	N
187f	Sec. 12, T145N, R99W	Slope	Natural	Y	0.04	0.03	Y	Y	N
187g	Sec. 12, T145N, R99W	Ditch	Artificial	Y	0.21	0.81	N	Y	N
188	Sec. 12, T145N, R99W	Ditch	Artificial	N	0.02	0.15	N	N	N
189	Sec. 12, T145N, R99W	Preamble	Artificial	Y	0.00	0.00	N	N	N
190	Sec. 11, T145N, R99W	Ditch	Artificial	N	0.00	0.03	N	N	N
191	Sec. 2, T145N, R99W	Ditch	Artificial	N	0.04	0.11	N	N	N
192	Sec. 2, T145N, R99W	Preamble	Artificial	N	0.00	0.00	N	N	N
193	Sec. 2, T145N, R99W	Preamble	Artificial	N	0.00	0.00	N	N	N
194	Sec. 1, T145N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
195	Sec. 1, T145N, R99W	Basin	Natural	N	0.06	0.00	N	N	N
196	Sec. 2, T145N, R99W	Basin	Natural	N	0.14	0.00	N	N	N
197	Sec. 23, T146N, R99W	Basin	Natural	Y	0.01	0.00	N	N	N
198a	Sec. 23, T146N, R99W	Slope	Natural	Y	0.01	0.04	Y	Y	N
198b	Sec. 24, T146N, R99W	Preamble	Natural	Y	0.06	0.10	Y	Y	N
199	Sec. 24, T146N, R99W	Preamble	Artificial	Y	0.00	0.00	N	N	N
200	Sec. 24, T146N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
201a	Sec. 13, T146N, R99W	Preamble	Natural	Y	0.00	0.00	N	N	N
201b	Sec. 13, T146N, R99W	Slope	Natural	Y	0.06	0.25	Y	Y	N
201c	Sec. 14, T146N, R99W	Preamble	Natural	Y	0.00	0.00	N	N	N
201d	Sec. 14, T146N, R99W	Preamble	Natural	Y	0.00	0.00	N	N	N
202a	Sec. 14, T146N, R99W	Ditch	Artificial	Y	0.00	0.10	N	Y	N
202b	Sec. 14, T146N, R99W	Slope	Natural	Y	0.04	0.13	Y	Y	N
202c	Sec. 13, T146N, R99W	Slope	Natural	Y	0.06	0.07	Y	Y	N
202d	Sec. 13, T146N, R99W	Preamble	Natural	Y	0.12	0.04	Y	Y	N
203	Sec. 13, T146N, R99W	Ditch	Artificial	N	0.01	0.11	N	N	N
204	Sec. 14, T146N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
205a	Sec. 2, T146N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
205b	Sec. 35, T147N, R99W	Slope	Natural	Y	0.10	0.12	Y	Y	N
205c	Sec. 36, T147N, R99W	Slope	Natural	Y	0.29	0.16	Y	Y	N
205d	Sec. 36, T147N, R99W	Ditch	Artificial	Y	0.00	0.00	N	N	N
206a	Sec. 35, T147N, R99W	Slope	Natural	Y	0.11	0.17	Y	Y	N
206b	Sec. 36, T147N, R99W	Slope	Natural	Y	0.09	0.16	Y	Y	N
206c	Sec. 36, T147N, R99W	Ditch	Artificial	Y	0.01	0.14	N	Y	N
207a	Sec. 36, T147N, R99W	Ditch	Artificial	N	0.00	0.14	N	N	N
207b	Sec. 36, T147N, R99W	Ditch	Artificial	N	0.00	0.11	N	N	N
207c	Sec. 36, T147N, R99W	Ditch	Artificial	N	0.00	0.29	N	N	N
208a	Sec. 35, T147N, R99W	Ditch	Artificial	N	0.00	0.05	N	N	N
208b	Sec. 35, T147N, R99W	Ditch	Artificial	N	0.00	0.52	N	N	N
209	Sec. 36, T147N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
210a	Sec. 26, T147N, R99W	Slope	Natural	Y	0.24	0.00	N	N	N
210b	Sec. 25, T147N, R99W	Preamble	Natural	Y	1.03	0.00	N	N	N
211a	Sec. 25, T147N, R99W	Preamble	Natural	Y	0.96	0.17	Y	Y	N
211b	Sec. 25, T147N, R99W	Ditch	Artificial	Y	0.02	0.29	N	Y	N
211c	Sec. 25, T147N, R99W	Slope	Natural	Y	0.02	0.01	Y	Y	N
211d	Sec. 25, T147N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
212a	Sec. 25, T147N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
212b	Sec. 25, T147N, R99W	Slope	Natural	N	0.07	0.01	Y	N	N
213	Sec. 24, T147N, R99W	Ditch	Artificial	N	0.00	0.11	N	N	N
214	Sec. 24, T147N, R99W	Ditch	Artificial	N	0.00	0.05	N	N	N
215a	Sec. 24, T147N, R99W	Slope	Natural	Y	0.20	0.02	Y	Y	N
215b	Sec. 24, T147N, R99W	Slope	Natural	Y	0.13	0.14	Y	Y	N
216	Sec. 24, T147N, R99W	Slope	Natural	N	0.10	0.00	N	N	N
217	Sec. 24, T147N, R99W	Slope	Natural	N	0.02	0.05	Y	N	N
218	Sec. 13, T147N, R99W	Slope	Natural	Y	0.05	0.08	Y	N	N
219	Sec. 13, T147N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
220	Sec. 13, T147N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
221	Sec. 13, T147N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
222	Sec. 13, T147N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
223a	Sec. 12, T147N, R99W	Slope	Natural	Y	0.48	0.00	N	N	N
223c	Sec. 12, T147N, R99W	Slope	Natural	Y	0.48	0.00	N	N	N
223e	Sec. 2, T147N, R99W	Fringe	Natural	Y	0.09	0.00	N	N	N
224	Sec. 12, T147N, R99W	Preamble	Artificial	N	0.93	0.00	N	N	N
225	Sec. 12, T147N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
226	Sec. 12, T147N, R99W	Ditch	Artificial	N	0.00	0.04	N	N	N
227	Sec. 12, T147N, R99W	Ditch	Artificial	N	0.00	0.04	N	N	N
228	Sec. 1, T147N, R99W	Preamble	Artificial	N	0.18	0.61	N	N	N
229	Sec. 35, T148N, R99W	Riverine	Natural	Y	0.00	0.00	N	N	N
230a	Sec. 35, T148N, R99W	Riverine	Natural	Y	0.00	0.00	N	N	N
230c	Sec. 35, T148N, R99W	Riverine	Natural	Y	0.00	0.00	N	N	N
231	Sec. 35, T148N, R99W	Preamble	Artificial	N	0.05	0.02	N	N	N
232	Sec. 35, T148N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
233	Sec. 26, T148N, R99W	Slope	Natural	N	0.05	0.03	Y	N	N

… table continued on page F-16 …

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
234	Sec. 26, T148N, R99W	Slope	Artificial	N	0.01	0.00	N	N	N
235	Sec. 26, T148N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
236	Sec. 26, T148N, R99W	Slope	Natural	Y	0.19	0.03	Y	N	N
237	Sec. 26, T148N, R99W	Slope	Natural	Y	0.01	0.01	Y	N	N
238	Sec. 26, T148N, R99W	Slope	Natural	Y	0.08	0.00	N	N	N
239	Sec. 26, T148N, R99W	Ditch	Artificial	Y	0.02	0.00	N	N	N
240	Sec. 26, T148N, R99W	Slope	Natural	N	0.01	0.00	N	N	N
241	Sec. 26, T148N, R99W	Slope	Natural	Y	0.12	0.00	N	N	N
242	Sec. 26, T148N, R99W	Slope	Natural	Y	0.01	0.00	N	N	N
243	Sec. 26, T148N, R99W	Ditch	Artificial	N	0.00	0.27	N	N	N
244	Sec. 26, T148N, R99W	Slope	Natural	N	0.01	0.00	N	N	N
245	Sec. 26, T148N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
246	Sec. 26, T148N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
247	Sec. 26, T148N, R99W	Ditch	Artificial	N	0.00	0.05	N	N	N
248	Sec. 22, T148N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
249	Sec. 23, T148N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
250a	Sec. 23, T148N, R99W	Slope	Natural	Y	0.03	0.17	Y	Y	N
250b	Sec. 22, T148N, R99W	Slope	Natural	Y	0.01	0.05	Y	Y	N
251	Sec. 23, T148N, R99W	Slope	Natural	N	0.00	0.07	Y	N	N
252a	Sec. 22, T148N, R99W	Slope	Natural	Y	0.05	0.21	Y	Y	N
252b	Sec. 23, T148N, R99W	Slope	Natural	Y	0.06	0.18	Y	Y	N
253a	Sec. 22, T148N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
253b	Sec. 15, T148N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
254	Sec. 23, T148N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
255	Sec. 14, T148N, R99W	Slope	Natural	Y	0.03	0.17	Y	Y	N
256	Sec. 14, T148N, R99W	Slope	Natural	N	0.00	0.00	N	N	N
257	Sec. 14, T148N, R99W	Ditch	Artificial	N	0.00	0.12	N	N	N
258	Sec. 15, T148N, R99W	Slope	Natural	Y	0.17	0.02	Y	N	N
259a	Sec. 36, T149N, R99W	Slope	Natural	Y	0.10	0.13	Y	Y	N
259b	Sec. 36, T149N, R99W	Slope	Natural	Y	0.05	0.12	Y	Y	N
260	Sec. 36, T149N, R99W	Ditch	Artificial	N	0.00	0.09	N	N	N
261	Sec. 36, T149N, R99W	Ditch	Artificial	N	0.00	0.04	N	N	N
262	Sec. 31, T149N, R98W	Slope	Natural	Y	0.01	0.05	Y	N	N
263	Sec. 30, T149N, R98W	Ditch	Artificial	N	0.00	0.01	N	N	N
264	Sec. 25, T149N, R99W	Ditch	Artificial	N	0.02	0.25	N	N	N
265	Sec. 30, T149N, R98W	Basin	Natural	N	0.40	0.11	Y	N	N
266	Sec. 24, T149N, R99W	Ditch	Artificial	N	0.00	0.28	N	N	N
267a	Sec. 24, T149N, R99W	Slope	Natural	Y	0.00	0.00	N	N	N
267b	Sec. 24, T149N, R99W	Slope	Natural	Y	0.01	0.02	Y	Y	N
267c	Sec. 24, T149N, R99W	Slope	Natural	Y	0.14	0.33	Y	Y	N
267d	Sec. 24, T149N, R99W	Slope	Natural	Y	0.11	0.03	Y	Y	N
267e	Sec. 19, T149N, R98W	Ditch	Artificial	Y	0.03	0.01	N	Y	N

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
268	Sec. 13, T149N, R99W	Ditch	Artificial	N	0.00	0.01	N	N	N
269	Sec. 12, T149N, R99W	Ditch	Artificial	N	0.00	0.02	N	N	N
270	Sec. 7, T149N, R98W	Ditch	Artificial	N	0.03	0.05	N	N	N
271	Sec. 12, T149N, R99W	Ditch	Artificial	N	0.03	0.00	N	N	N
275	Sec. 22, T141N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
276	Sec. 14, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
277	Sec. 14, T142N, R99W	Basin	Natural	N	0.00	0.00	N	N	N
278	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
279	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
280	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
281	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
282	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
283	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
284	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
285	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
286	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
287	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
288	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
289	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
290	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
291	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
292	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
293	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
294	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
295	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
296	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
297	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
298	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
299	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
300	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
301	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
302	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
303	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
304	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
305	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
306	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
307	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
308	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
309	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
310	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
311	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
312	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N

… table continued on page F-17…

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
313	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
314	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
315	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
316	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
317	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
318	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
319	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
320	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
321	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
322	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
323	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
324	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
325	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
326	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
327	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
Total					**20.58**	**19.00**			

Table F.4. Alternative C (without options) Other Waters Impacts

OW Number	Location	OW Type	OW Size		Feature	USACE Jurisdictional OW	OW Impacts				OW Mitigation Required		
			Acre(s)	Linear Feet			Acre(s)		Linear Feet		EO 11990	USACE	USFWS
							Temp.	Perm.	Temp.	Perm.			
36c	Sec. 22, T141N, R99W	Riverine	0.66	1,242	Natural	Y	0.06	0.12	92	212	N	N	N
223b	Sec. 1, 2, 12, T147N, R99W	Riverine	0.20	1,435	Natural	Y	0.00	0.00	0	0	N	N	N
223d	Sec. 12, T147N, R99W	Riverine	1.37	9,056	Natural	Y	0.34	0.00	2,639	0	N	N	N
230b	Sec. 35, T148N, R99W	Riverine	10.94	2,001	Natural	Y	0.00	0.00	0	0	N	N	N
267f	Sec. 18, 19, T149N, R98W and Sec. 13, T149N, R99W	Riverine	0.22	905	Natural	Y	0.04	0.02	183	47	N	N	N
267g	Sec. 13, T149N, R99W	Riverine	0.16	850	Natural	Y	0.02	0.02	65	135	N	N	N
Total			**13.55**	**15,489**			**0.46**	**0.16**	**2,979**	**394**			

F.1.3. Fairfield Options Wetlands and Other Waters Impact Tables

Table F.5. Option FF-1 with Alternatives B and C Wetland Impacts

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
60a	Sec. 22, T142N, R99W	Ditch	Artificial	N	0.00	0.13	N	N	N
60b	Sec. 23, T142N, R99W	Ditch	Artificial	N	0.00	0.06	N	N	N
60c	Sec. 15, T142N, R99W	Ditch	Artificial	N	0.00	0.42	N	N	N
60d	Sec. 14, T142N, R99W	Ditch	Artificial	N	0.00	0.13	N	N	N
61	Sec. 11, T142N, R99W	Basin	Natural	Y	0.04	0.01	Y	N	N
69	Sec. 10, T142N, R99W	Basin	Natural	N	0.01	0.00	N	N	N
73	Sec. 2, T142N, R99W	Slope	Natural	N	0.01	0.00	N	N	N
Total					**0.06**	**0.75**			

Table F.6. Option FF-2 with Alternative B Wetland Impacts

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
60a	Sec. 22, T142N, R99W	Ditch	Artificial	N	0.01	0.13	N	N	N
60b	Sec. 23, T142N, R99W	Ditch	Artificial	N	0.00	0.06	N	N	N
60c	Sec. 15, T142N, R99W	Ditch	Artificial	N	0.00	0.42	N	N	N
60d	Sec. 14, T142N, R99W	Ditch	Artificial	N	0.00	0.13	N	N	N
69	Sec. 10, T142N, R99W	Basin	Natural	N	0.01	0.00	N	N	N
70	Sec. 10, T142N, R99W	Basin	Natural	N	0.00	0.03	Y	N	N
71	Sec. 10, T142N, R99W	Basin	Natural	N	0.01	0.02	Y	N	N
Total					**0.03**	**0.79**			

Table F.7. Option FF-2 with Alternative C Wetland Impacts

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
60d	Sec. 14, T142N, R99W	Ditch	Artificial	N	0.00	0.13	N	N	N
69	Sec. 10, T142N, R99W	Basin	Natural	N	0.01	0.01	Y	N	N
70	Sec. 10, T142N, R99W	Basin	Natural	N	0.00	0.03	Y	N	N
71	Sec. 10, T142N, R99W	Basin	Natural	N	0.00	0.03	Y	N	N
Total					**0.01**	**0.81**			

Table F.8. Option FF-3 with Alternative B Wetland Impacts

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
63	Sec. 11, T142N, R99W	Basin	Natural	Y	0.01	0.01	Y	N	N
64	Sec. 11, T142N, R99W	Basin	Natural	Y	0.01	0.00	N	N	N
65	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.03	Y	N	N
66	Sec. 11, T142N, R99W	Basin	Natural	Y	0.01	0.03	Y	N	N
67	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.02	Y	N	N
68	Sec. 11, T142N, R99W	Basin	Natural	Y	0.01	0.01	Y	N	N
326	Sec. 11, T142N, R99W	Basin	Natural	Y	0.01	0.01	Y	N	N
Total					**0.05**	**0.11**			

Table F.9. Option FF-3 with Alternative C Wetland Impacts

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
63	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.01	Y	N	N
64	Sec. 11, T142N, R99W	Basin	Natural	Y	0.02	0.01	Y	N	N
65	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.03	Y	N	N
66	Sec. 11, T142N, R99W	Basin	Natural	Y	0.01	0.01	Y	N	N
67	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.02	Y	N	N
68	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.01	Y	N	N
326	Sec. 11, T142N, R99W	Basin	Natural	Y	0.01	0.00	N	N	N
Total					**0.04**	**0.09**			

Table F.10. Option FF-4 with Alternative B Wetland Impacts

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
276	Sec. 14, T142N, R99W	Basin	Natural	N	0.04	0.05	Y	N	N
284	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.01	Y	N	N
325	Sec. 11, T142N, R99W	Basin	Natural	Y	0.01	0.00	N	N	N
327	Sec. 11, T142N, R99W	Basin	Natural	Y	0.01	0.00	N	N	N
Total					**0.06**	**0.06**			

Table F.11. Option FF-4 with Alternative C Wetland Impacts

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
322	Sec. 11, T142N, R99W	Basin	Natural	Y	0.01	0.00	N	N	N
323	Sec. 11, T142N, R99W	Basin	Natural	Y	0.01	0.00	N	N	N
324	Sec. 11, T142N, R99W	Basin	Natural	Y	0.00	0.00	N	N	N
325	Sec. 11, T142N, R99W	Basin	Natural	Y	0.01	0.01	Y	N	N
326	Sec. 11, T142N, R99W	Basin	Natural	Y	0.01	0.00	N	N	N
327	Sec. 11, T142N, R99W	Basin	Natural	Y	0.01	0.00	N	N	N
Total					**0.14**	**0.12**			

Table F.12. Options FF-1, FF-2, FF-3, and FF-4 with Alternatives B and C Other Waters Impacts

OW Number	Location	OW Type	OW Size		Feature	USACE Jurisdictional OW	OW Impacts				OW Mitigation Required		
			Acre(s)	Linear Feet			Acre(s)		Linear Feet		EO 11990	USACE	USFWS
							Temp.	Perm.	Temp.	Perm.			
No impacts on Other Waters.													
Total			**0.00**	**0**			**0.00**	**0.00**	**0**	**0**			

F.1.4. ND-200/US Highway 85 Intersection Options Wetland and Other Waters Impact Tables

Table F.13. Option INT-1 with Alternatives B and C Wetland Impacts

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
155	Sec. 33, T145N, R98W	Ditch	Artificial	N	0.01	0.00	N	N	N
156	Sec. 28, T145N, R98W	Ditch	Artificial	N	0.01	0.02	N	N	N
157	Sec. 28, T145N, R98W	Ditch	Artificial	N	0.02	0.00	N	N	N
158	Sec. 28, T145N, R98W	Ditch	Artificial	N	0.01	0.00	N	N	N
Total					**0.05**	**0.02**			

Table F.14. Option INT-2 with Alternatives B and C Wetland Impacts

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
155	Sec. 33, T145N, R98W	Ditch	Artificial	N	0.01	0.00	N	N	N
156	Sec. 28, T145N, R98W	Ditch	Artificial	N	0.00	0.03	N	N	N
157	Sec. 28, T145N, R98W	Ditch	Artificial	N	0.02	0.00	N	N	N
158	Sec. 28, T145N, R98W	Ditch	Artificial	N	0.01	0.00	N	N	N
Total					**0.04**	**0.03**			

Table F.15. Options INT-1 and INT-2 with Alternatives B and C Other Waters Impacts

OW Number	Location	OW Type	OW Size		Feature	USACE Jurisdictional OW	OW Impacts				OW Mitigation Required		
			Acre(s)	Linear Feet			Acre(s)		Linear Feet		EO 11990	USACE	USFWS
							Temp.	Perm.	Temp.	Perm.			
No impacts on Other Waters.													
Total			**0.00**	**0**			**0.00**	**0.00**	**0**	**0**			

F.1.5. Long X Bridge Options Wetland and Other Waters Impact Tables

Table F.16. Options LX-1, LX-2, and LX-3 with Alternatives B and C Wetland Impacts

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)		Wetland Mitigation Required		
					Temp.	Perm.	EO 11990	USACE	USFWS
230a	Sec. 35, T148N, R99W	Riverine	Natural	Y	0.91	0.00	N	N	N
230c	Sec. 35, T148N, R99W	Riverine	Natural	Y	0.22	0.00	N	N	N
Total					**1.13**	**0.00**			

Table F.17. Option LX-1 with Alternatives B and C Other Waters Impacts

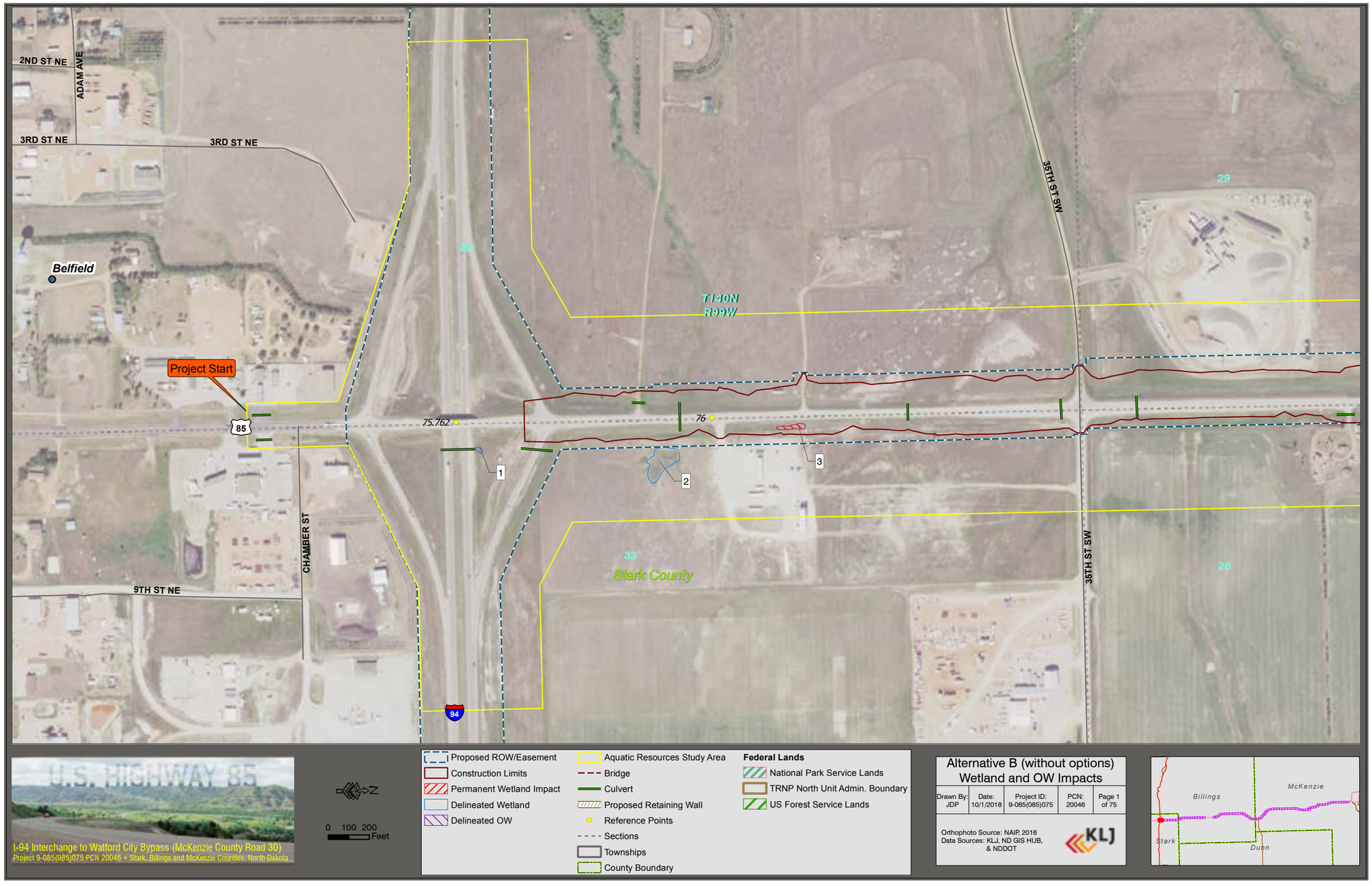
OW Number	Location	OW Type	OW Size		Feature	USACE Jurisdictional OW	OW Impacts				OW Mitigation Required		
			Acre(s)	Linear Feet			Acre(s)		Linear Feet		EO 11990	USACE	USFWS
							Temp.	Perm.	Temp.	Perm.			
230b	Sec. 35, T148N, R99W	Riverine	10.94	2,001	Natural	Y	1.71	0.14	305	78	N	N	N
Total			**10.94**	**2,001**			**1.71**	**0.14**	**305**	**78**			

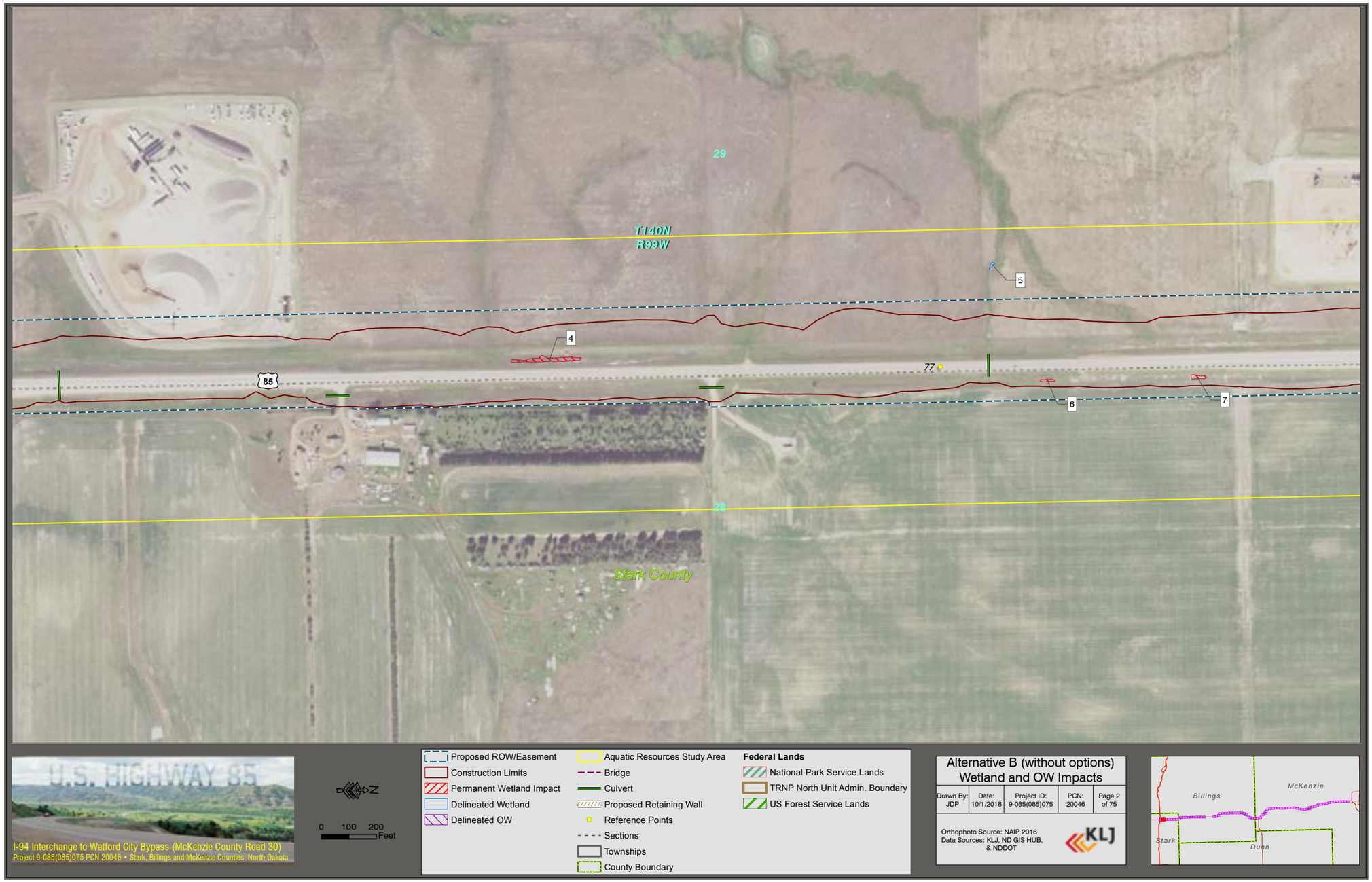
Table F.18. Options LX-2 and LX-3 with Alternatives B and C Other Waters Impacts

OW Number	Location	OW Type	OW Size		Feature	USACE Jurisdictional OW	OW Impacts				OW Mitigation Required		
			Acre(s)	Linear Feet			Acre(s)		Linear Feet		EO 11990	USACE	USFWS
							Temp.	Perm.	Temp.	Perm.			
230b	Sec. 35, T148N, R99W	Riverine	10.94	2,001	Natural	Y	1.71	0.22	305	121	N	N	N
Total			**10.94**	**2,001**			**1.71**	**0.22**	**305**	**121**			

F.2. Wetland and Other Waters Impact Maps

F.2.1. Alternative B (without options) Wetland and Other Waters Impact Maps





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

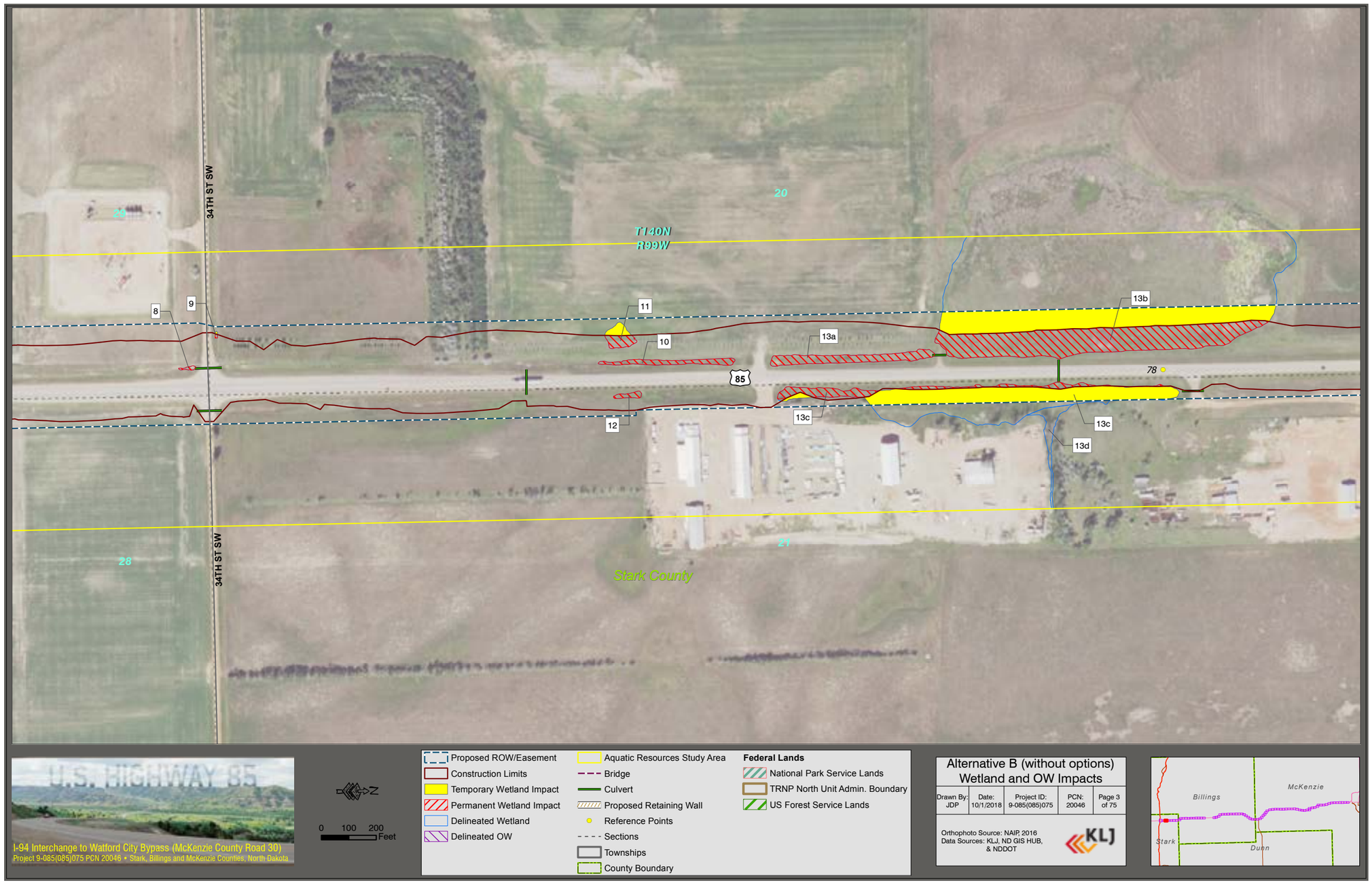
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

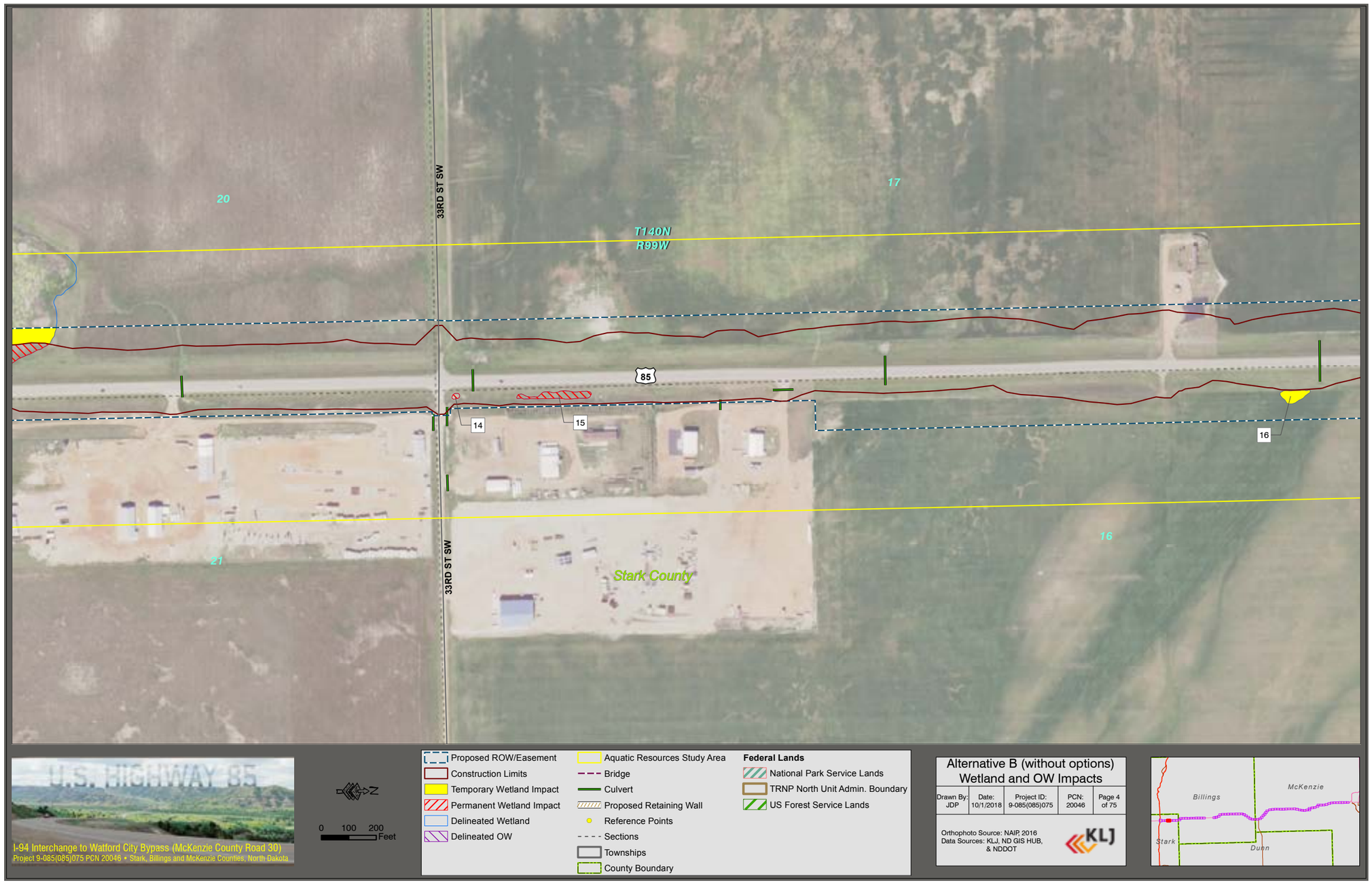
Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 2 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


34TH ST SW
29
20
T140N
R99W
8
9
11
10
13a
13b
85
78
12
13c
13c
13d
28
21
34TH ST SW
Stark County
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 3 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

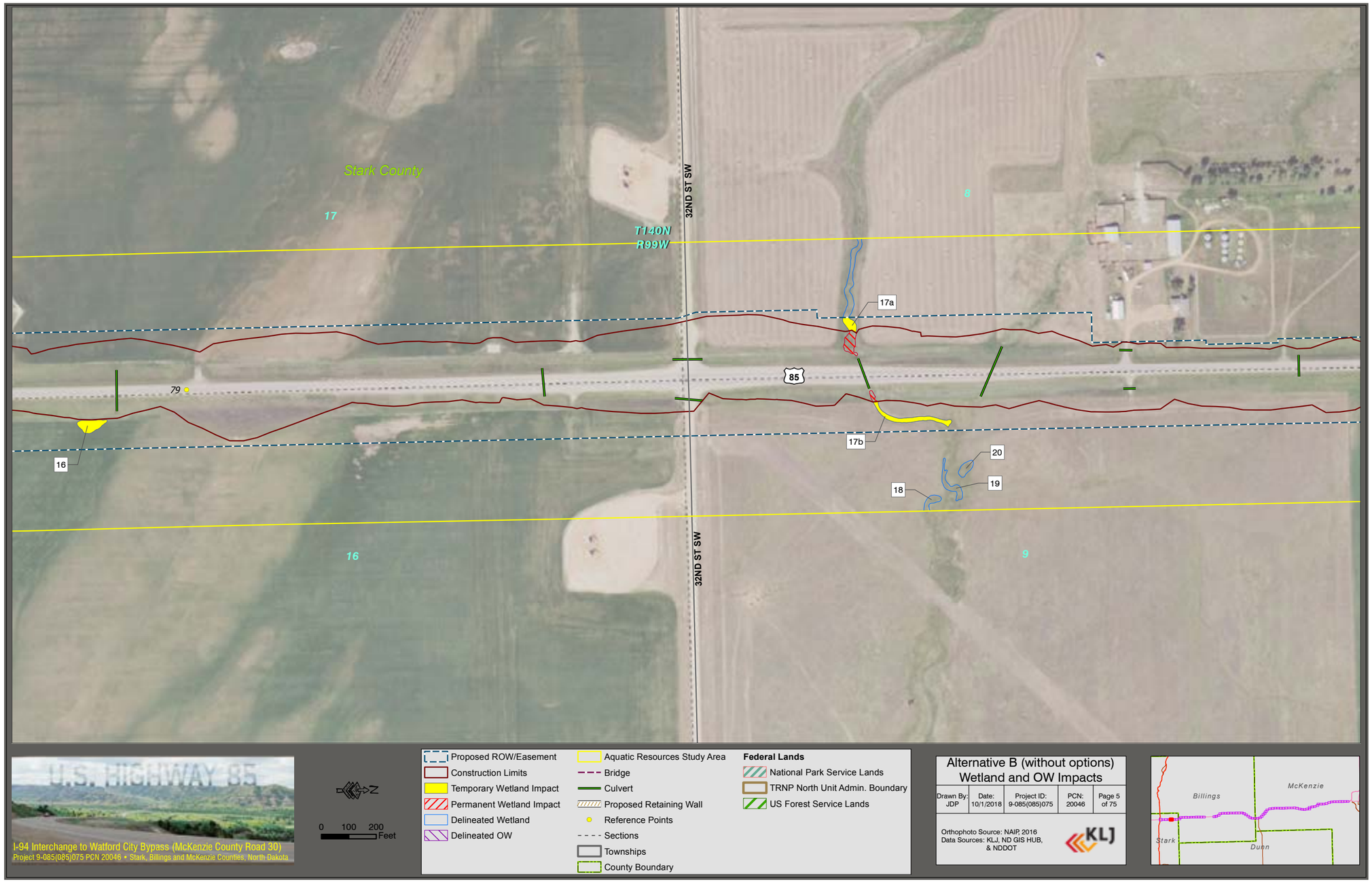
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 4 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

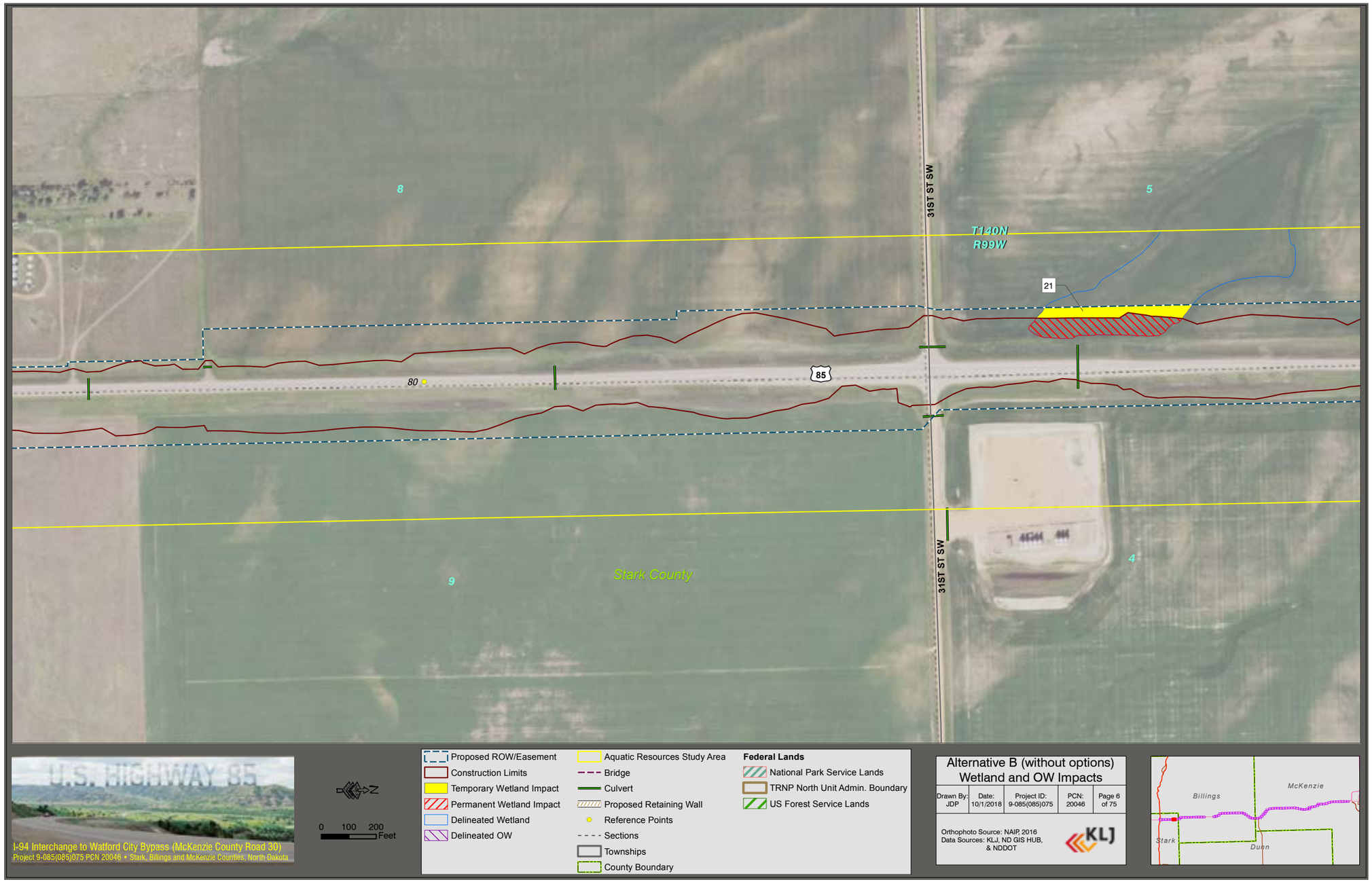
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

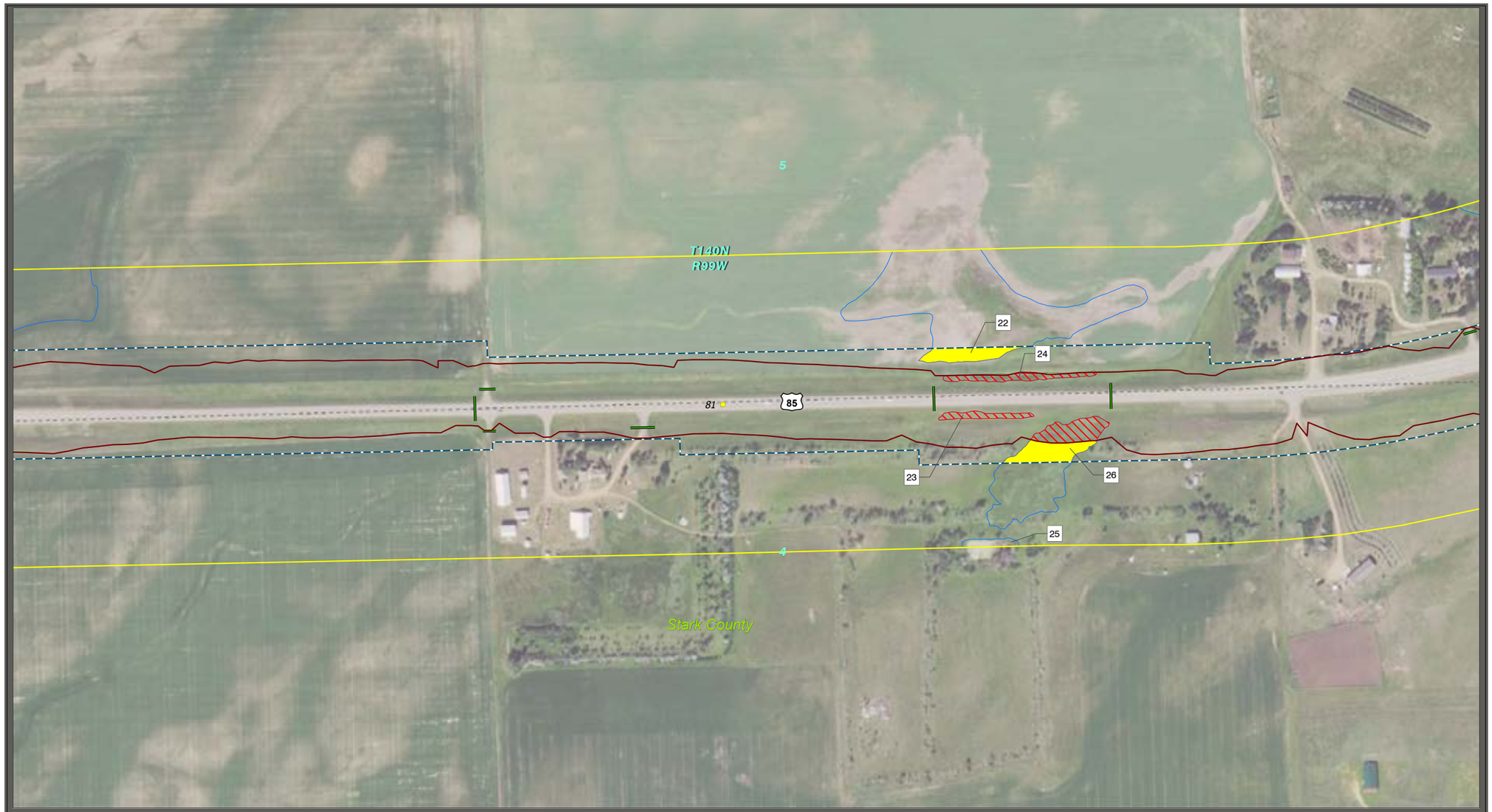
Alternative B (without options) Wetland and OW Impacts

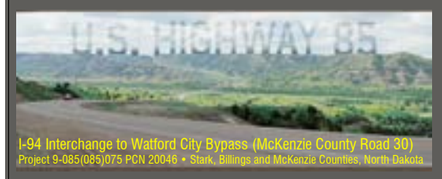
Drawn By:	Date:	Project ID:	PCN:	Page 5 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


8
5
31ST ST SW
T140N
R99W
21
80
85
9
Stark County
4
31ST ST SW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 6 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn





0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

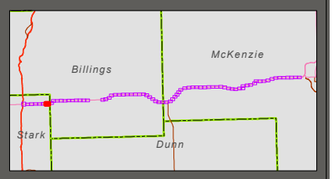
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

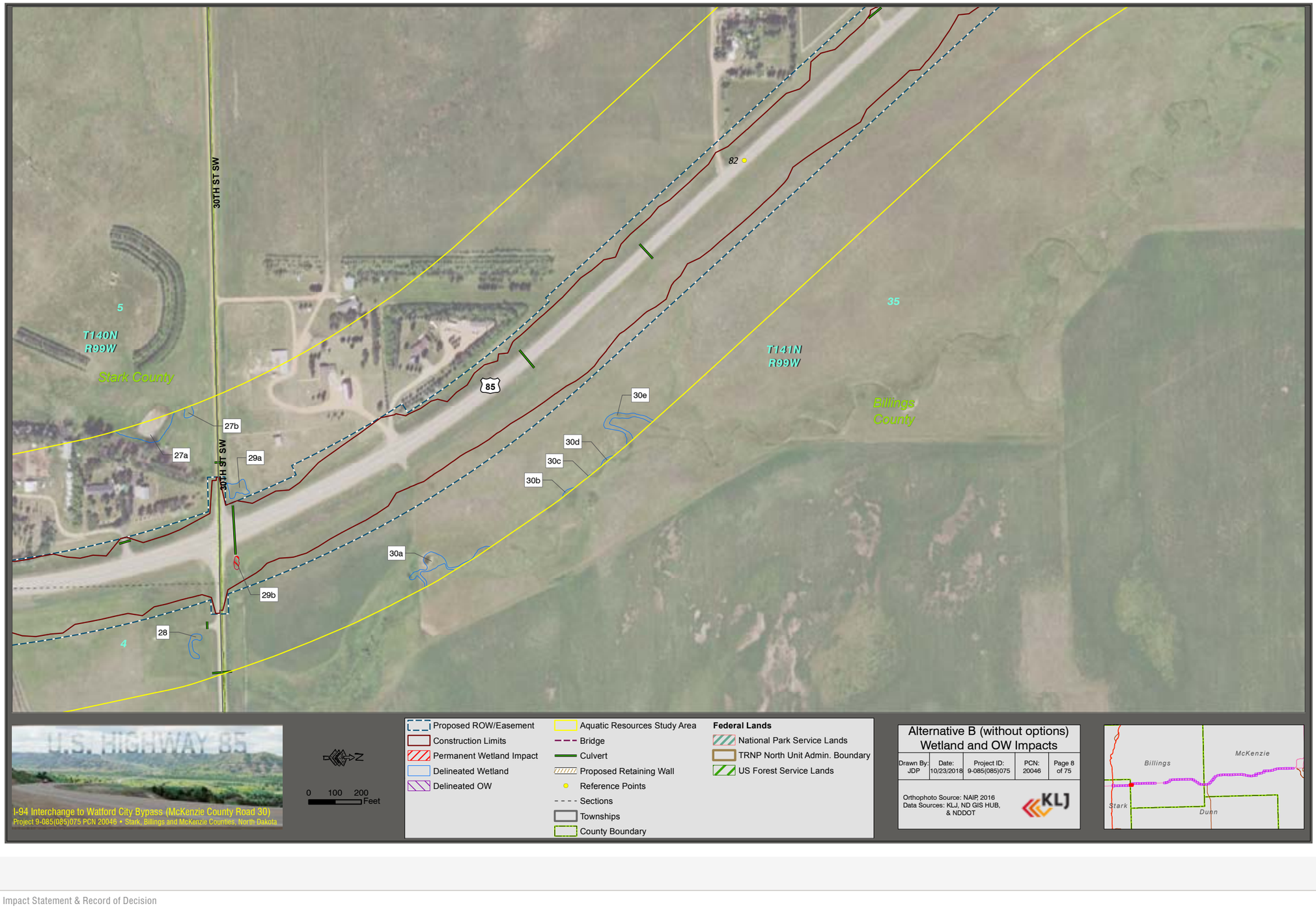
Alternative B (without options) Wetland and OW Impacts

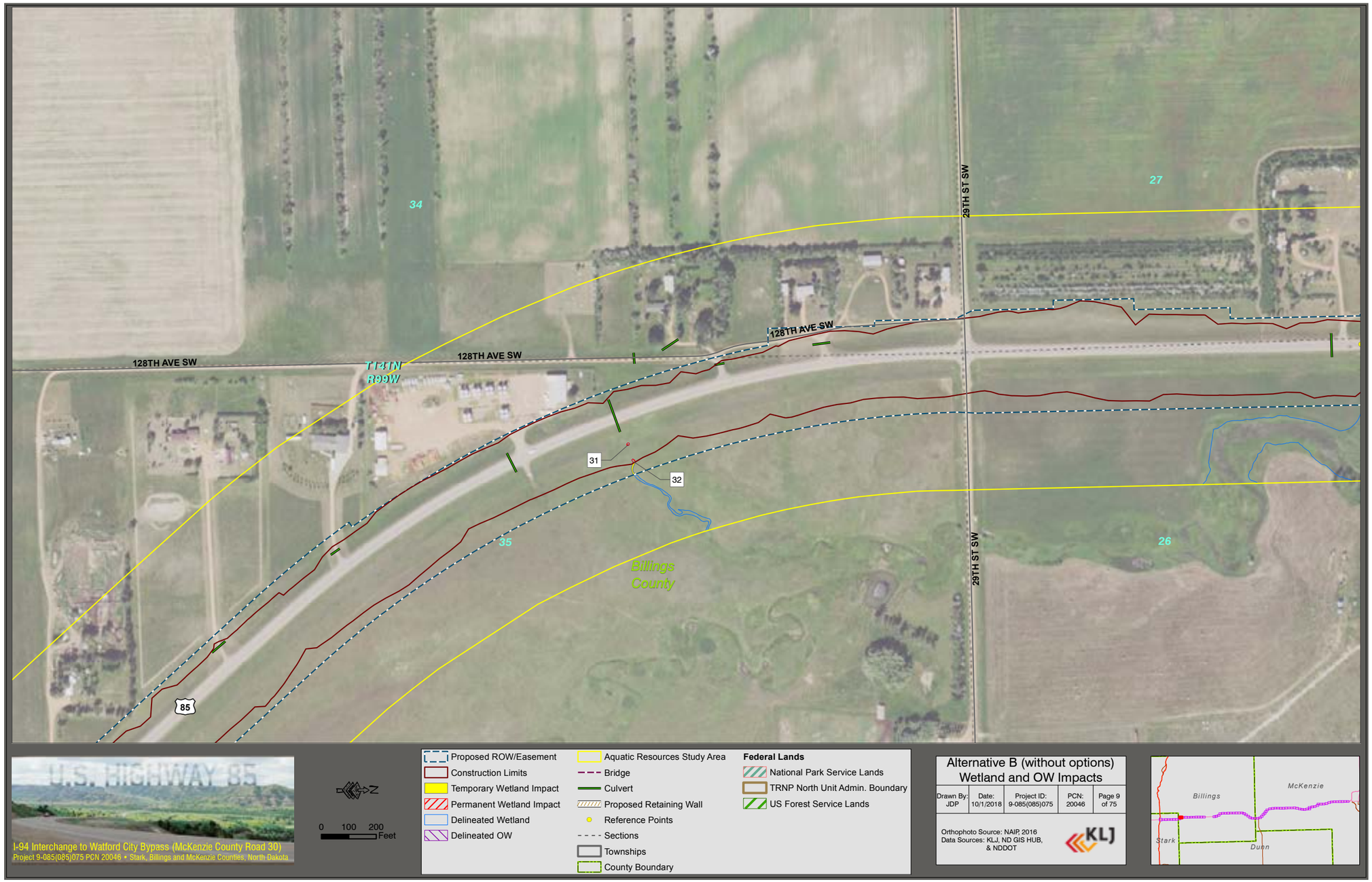
Drawn By:	Date:	Project ID:	PCN:	Page 7 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ




30TH ST SW
82
5
T140N
R99W
Stark County
85
35
T141N
R99W
Billings
County
30e
30d
30c
30b
27b
27a
29a
30TH ST SW
30a
29b
28
4
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/23/2018
Project ID: 9-085(085)075
PCN: 20046
Page 8 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

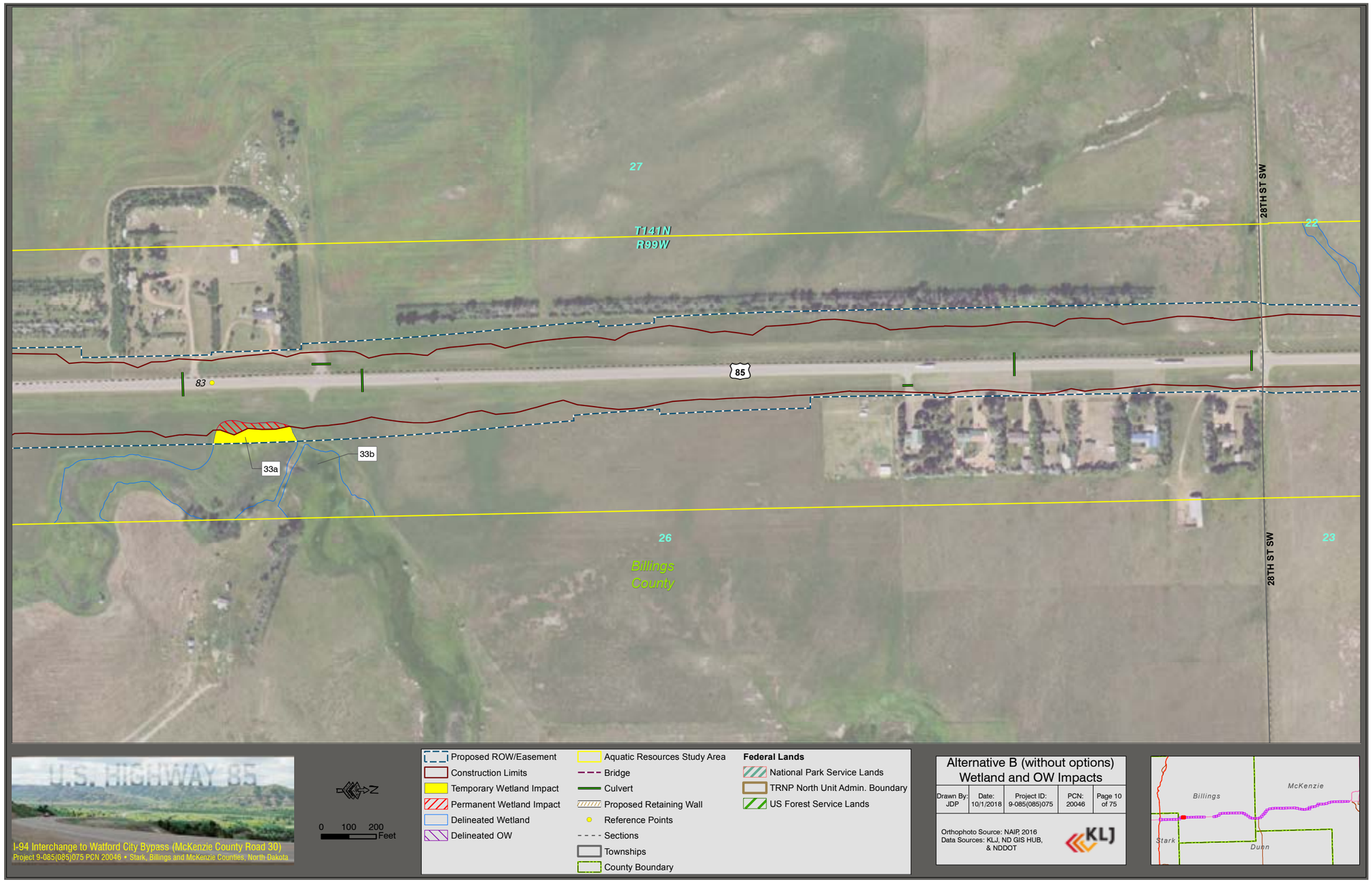
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 9 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

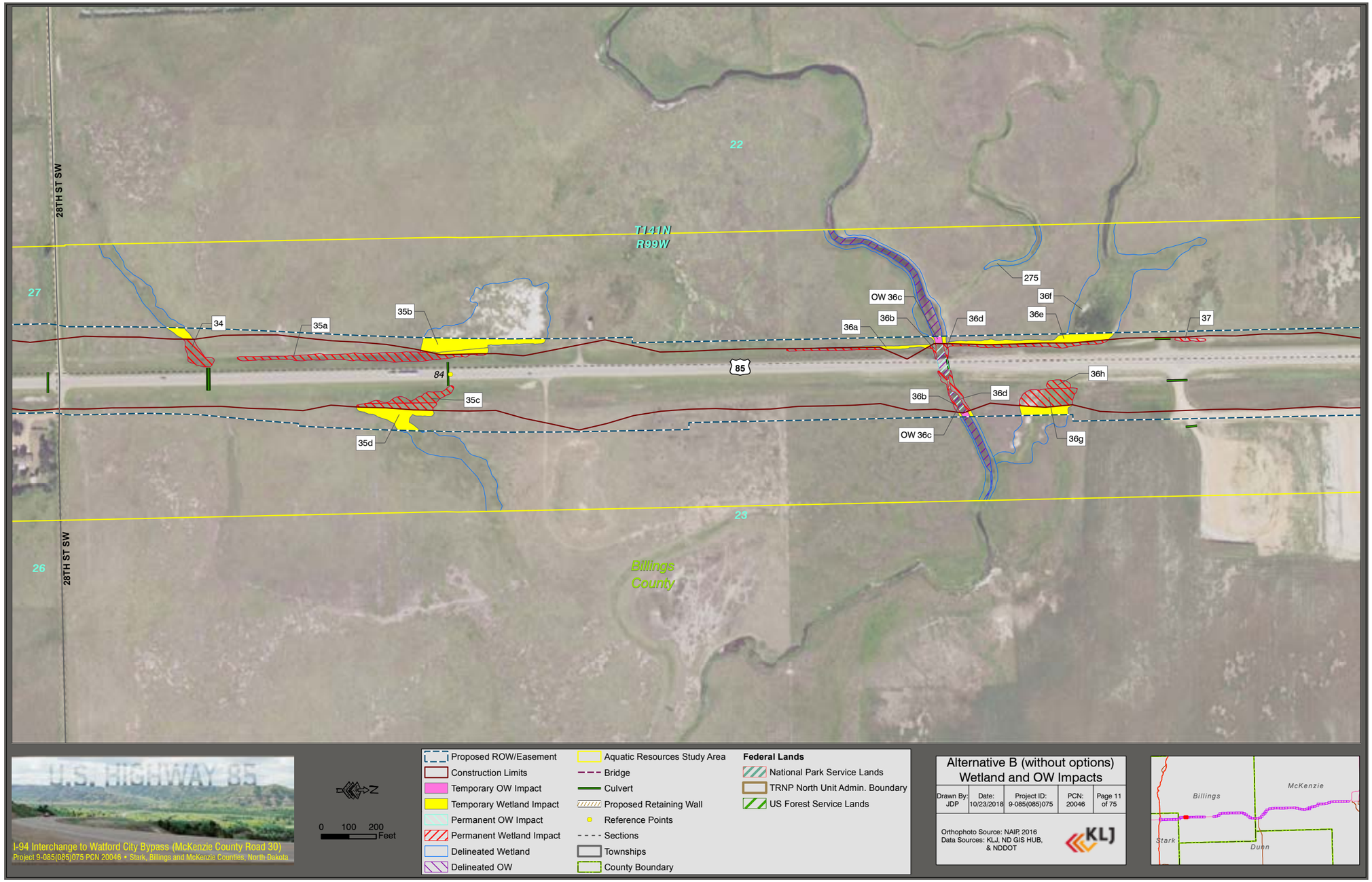
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

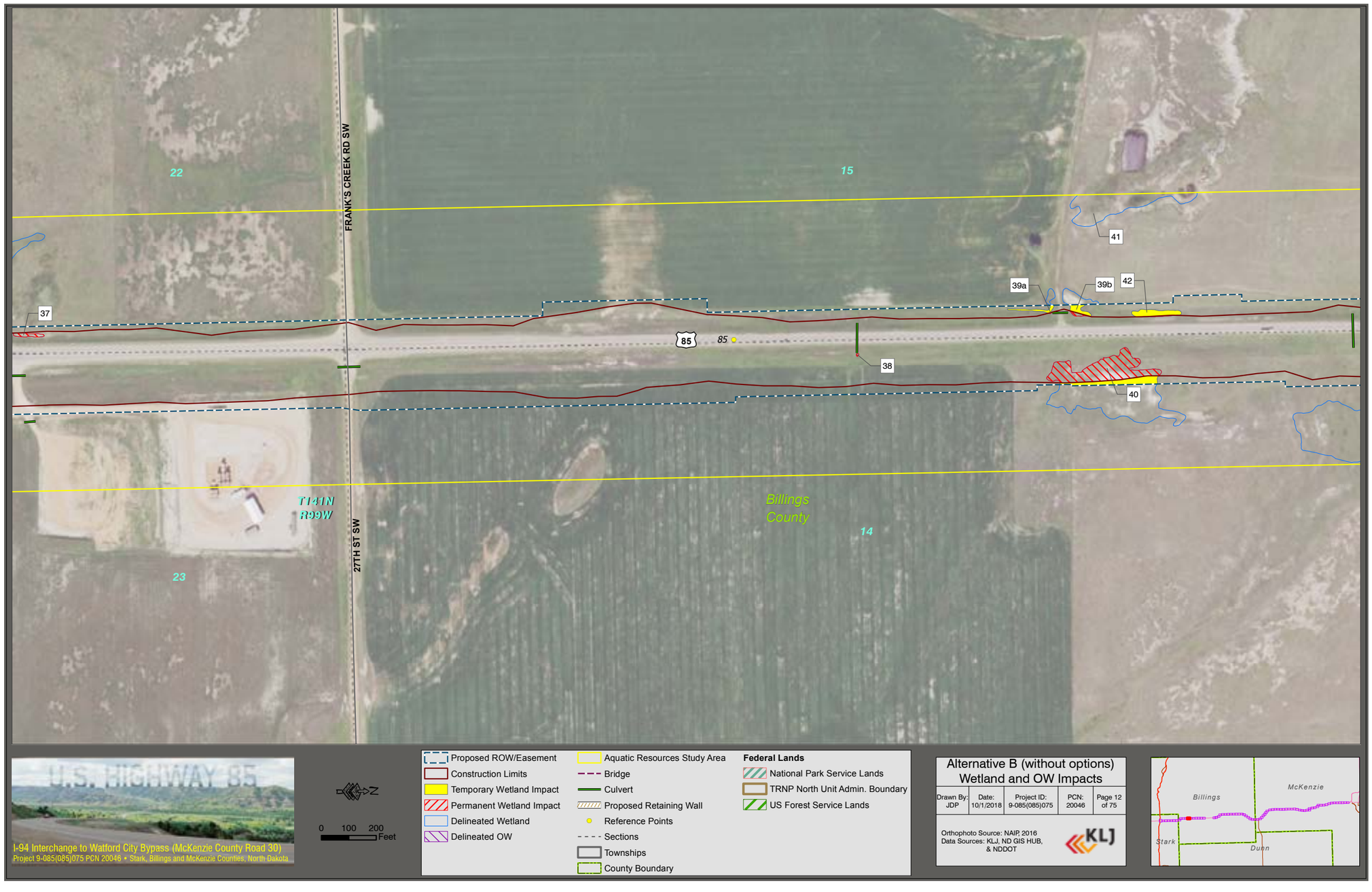
Alternative B (without options) Wetland and OW Impacts

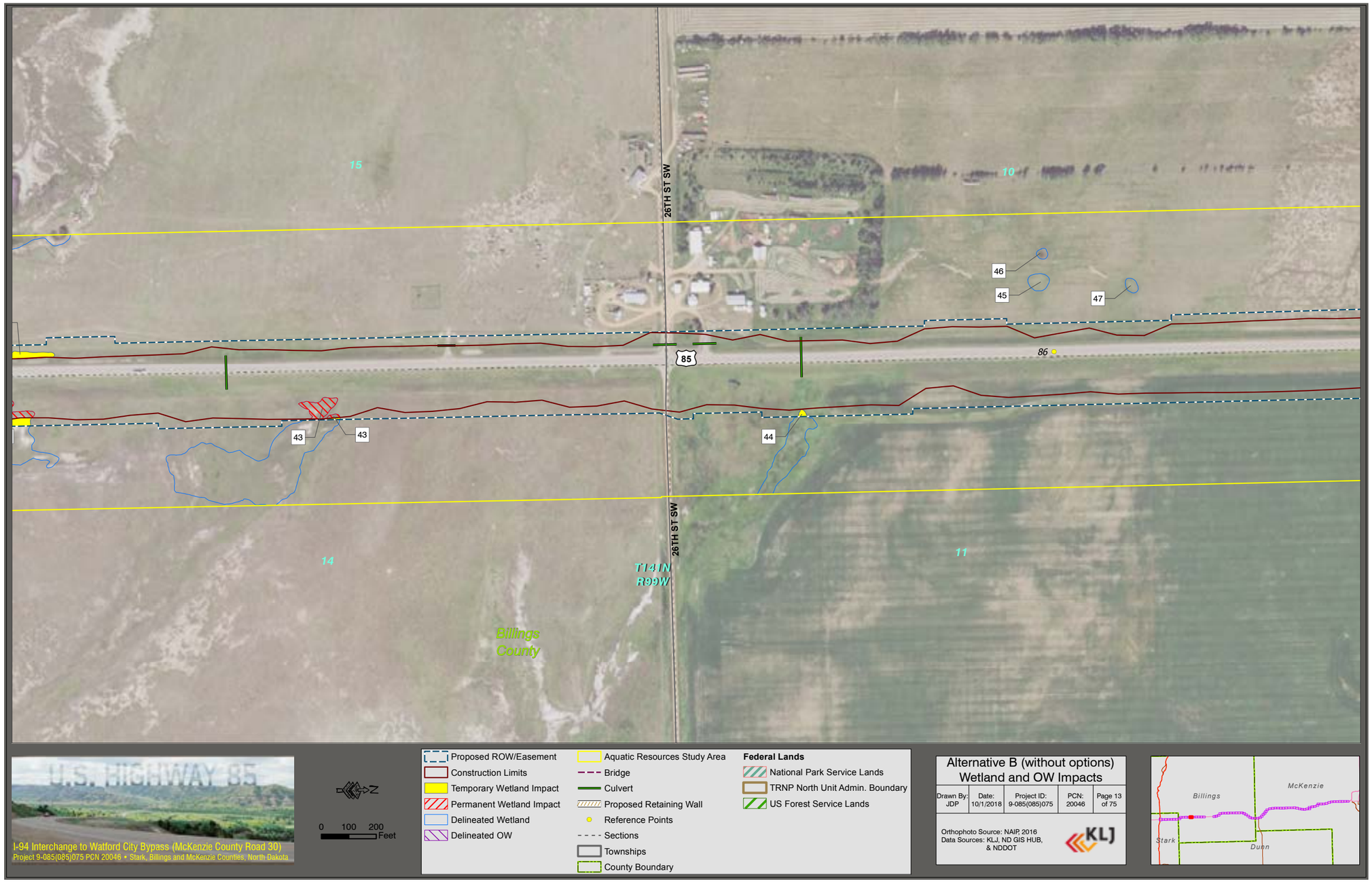
Drawn By:	Date:	Project ID:	PCN:	Page 10 of 75
JDP	10/1/2018	9-085(085)075	20046	

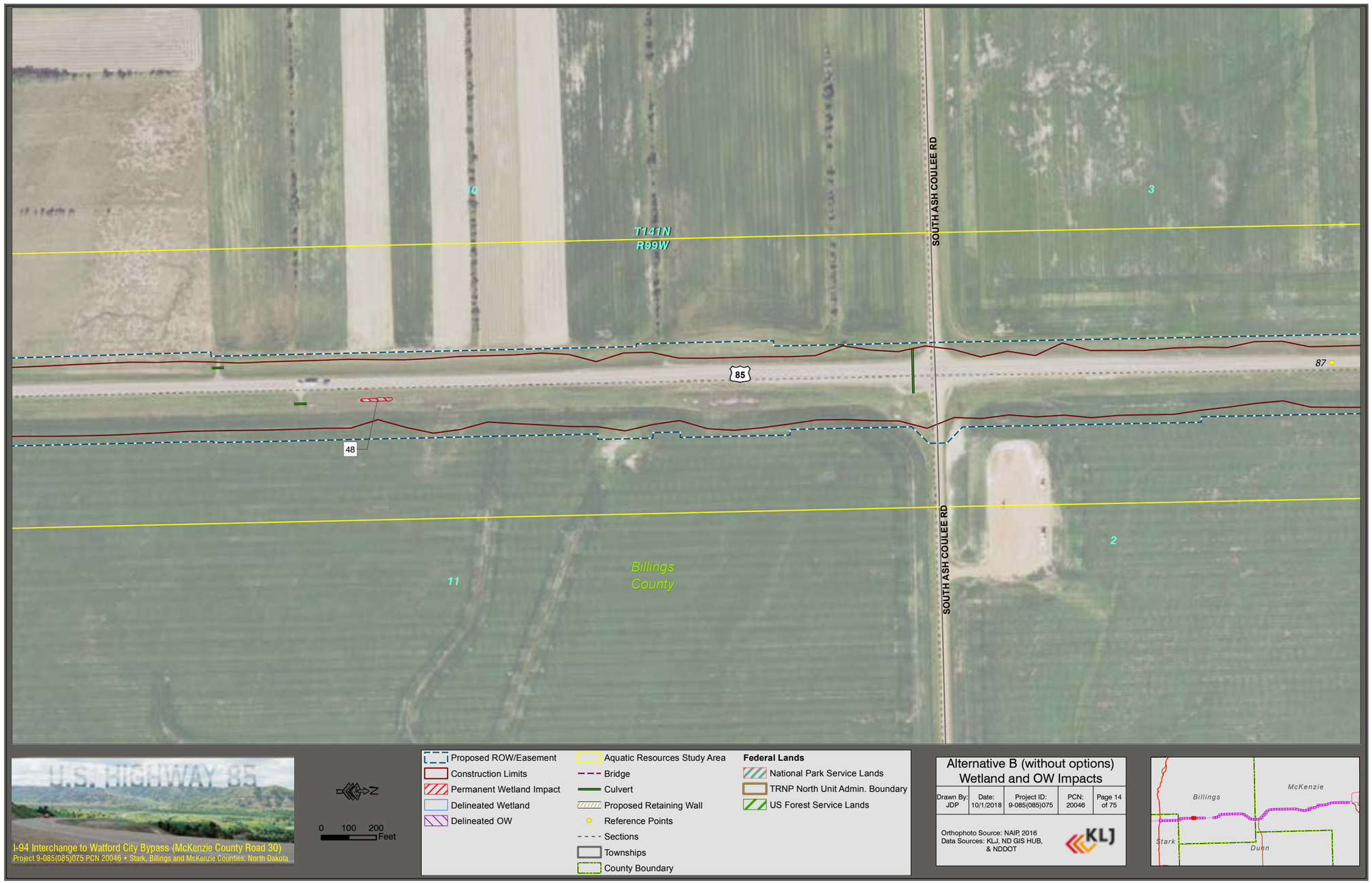
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

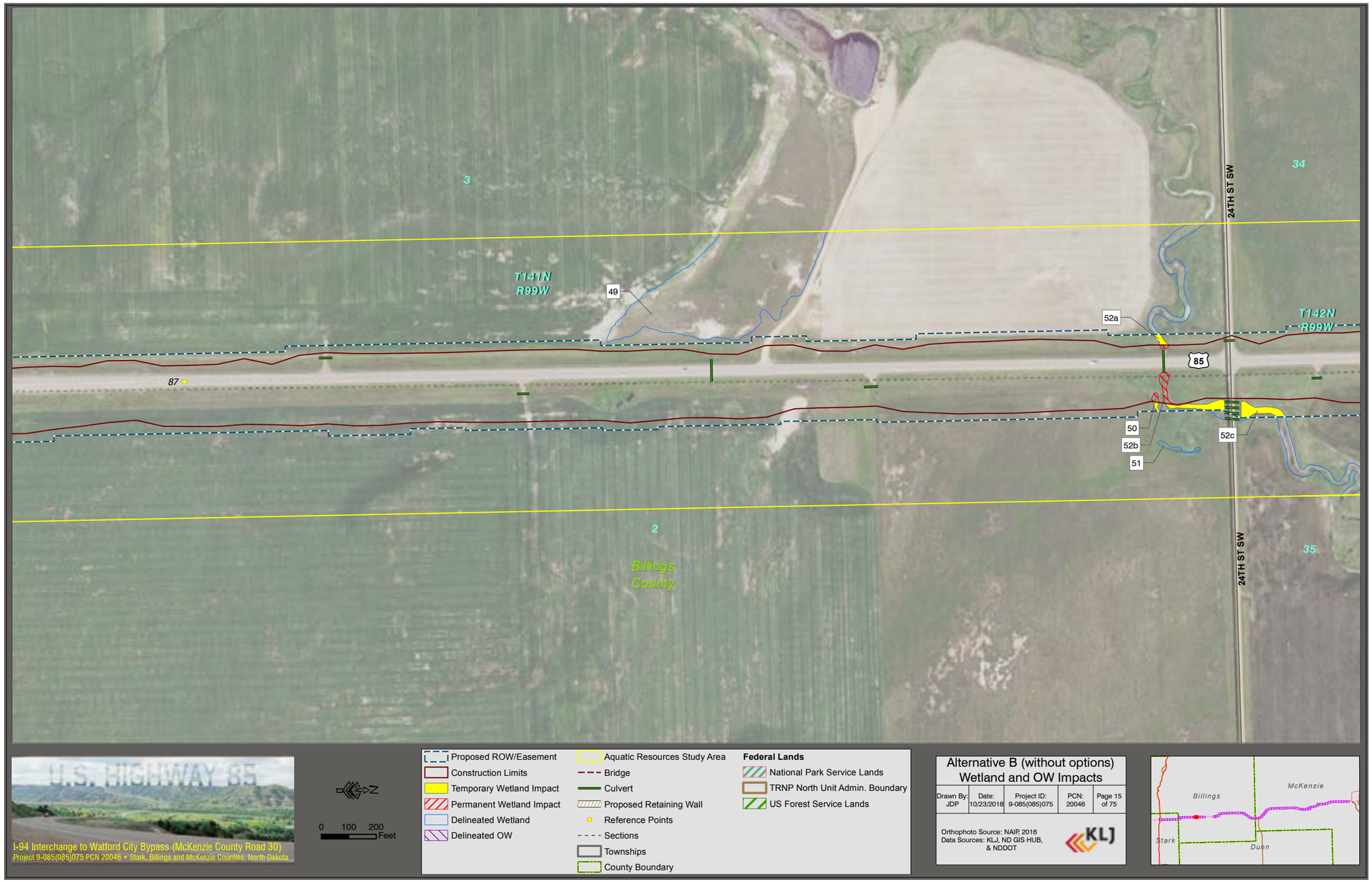
KLJ


22
28TH ST SW
T141N
R99W
27
34
35a
35b
84
35c
35d
85
OW 36c
36b
36a
36d
275
36f
36e
37
36h
36g
23
26
Billings
County
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200 Feet
Proposed ROW/Easement
Construction Limits
Temporary OW Impact
Temporary Wetland Impact
Permanent OW Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/23/2018
Project ID: 9-085(085)075
PCN: 20046
Page 11 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


22
15
FRANK'S CREEK RD SW
41
39a
39b
42
37
85
85
38
40
T141N
R99W
Billings
County
14
23
27TH ST SW
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
0 100 200
Feet
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 12 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


15
10
26TH ST SW
46
45
47
85
86
43
43
44
14
T 141 N
R99W
11
Billings
County
26TH ST SW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 13 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


10
T141N
R99W
SOUTH ASH COULEE RD
3
85
87
48
11
Billings
County
SOUTH ASH COULEE RD
2
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 14 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota

N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

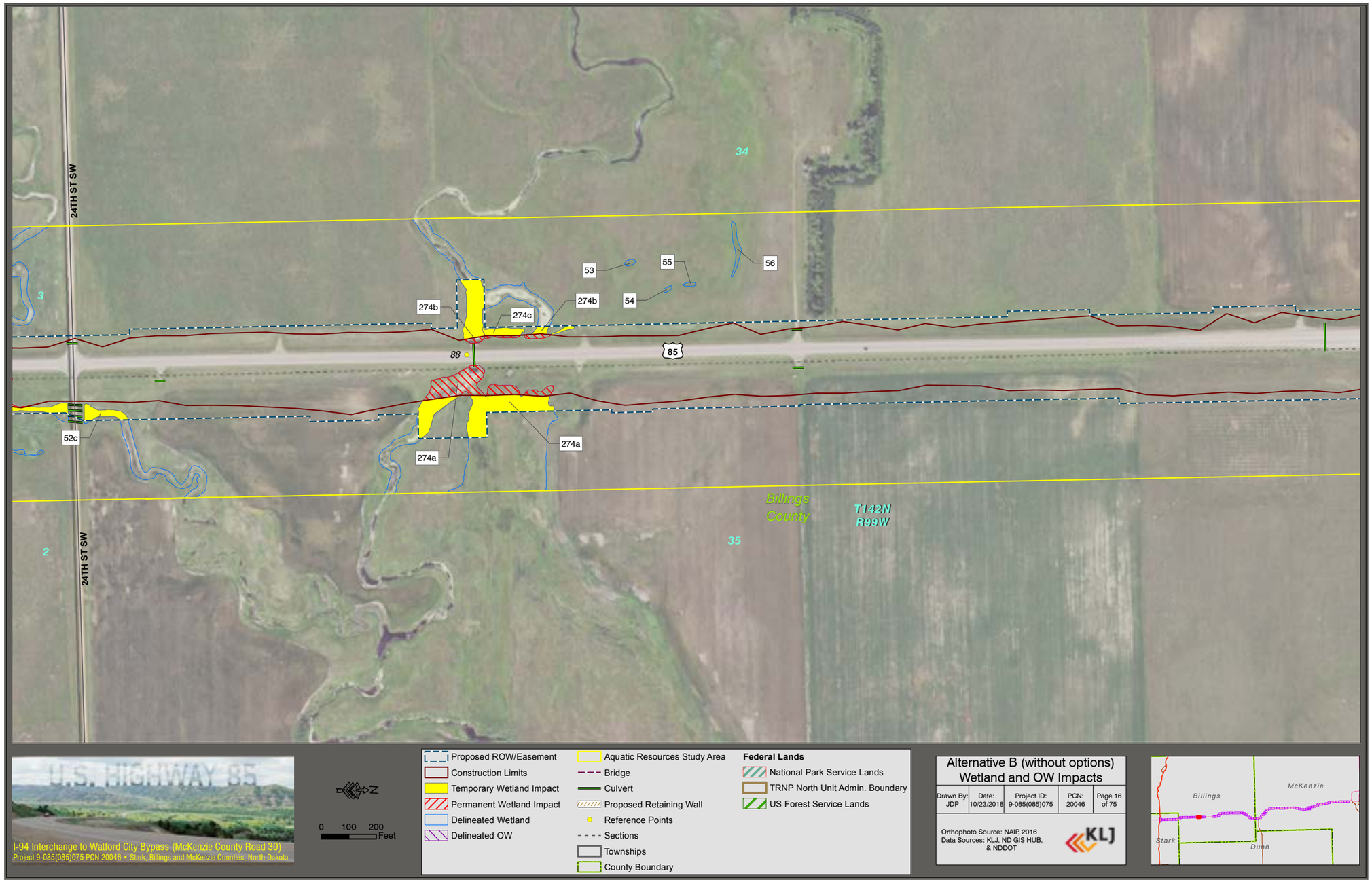
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 15 of 75
JDP	10/23/2018	9-085(085)075	20046	

Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

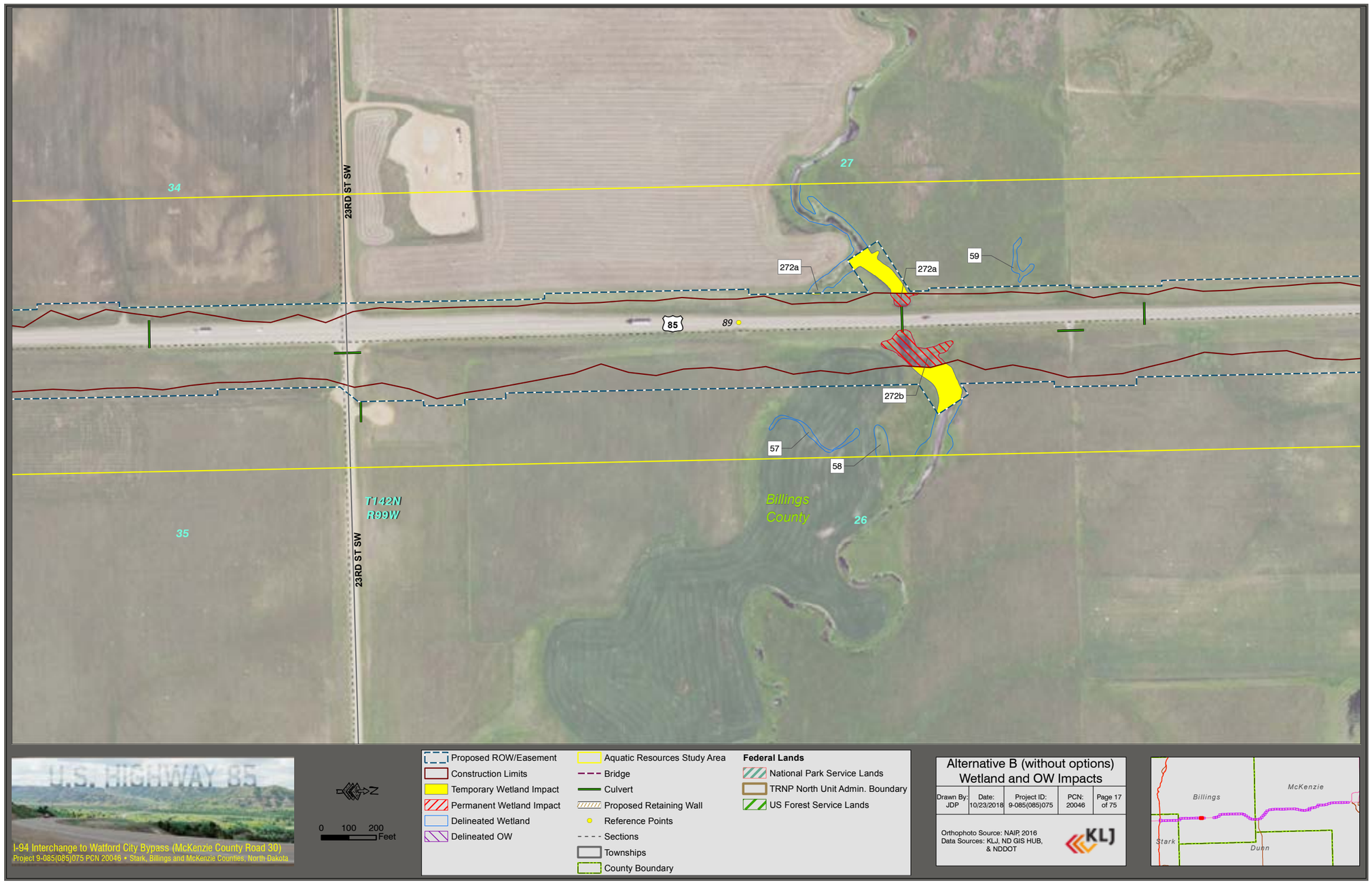
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative B (without options) Wetland and OW Impacts

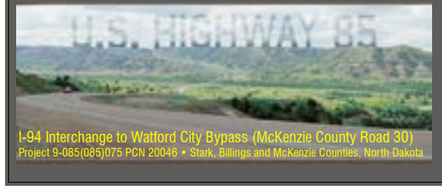
Drawn By:	Date:	Project ID:	PCN:	Page 16 of 75
JDP	10/23/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


34
23RD ST SW
27
272a
272a
59
85
89
272b
57
58
T142N
R99W
Billings
County
26
35
23RD ST SW
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/23/2018
Project ID: 9-085(085)075
PCN: 20046
Page 17 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


27
22
22ND ST SW
90
85
See Fairfield Options Maps
T142N
R99W
26
Billings
County
23
22ND ST SW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 18 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



0 100 200 Feet

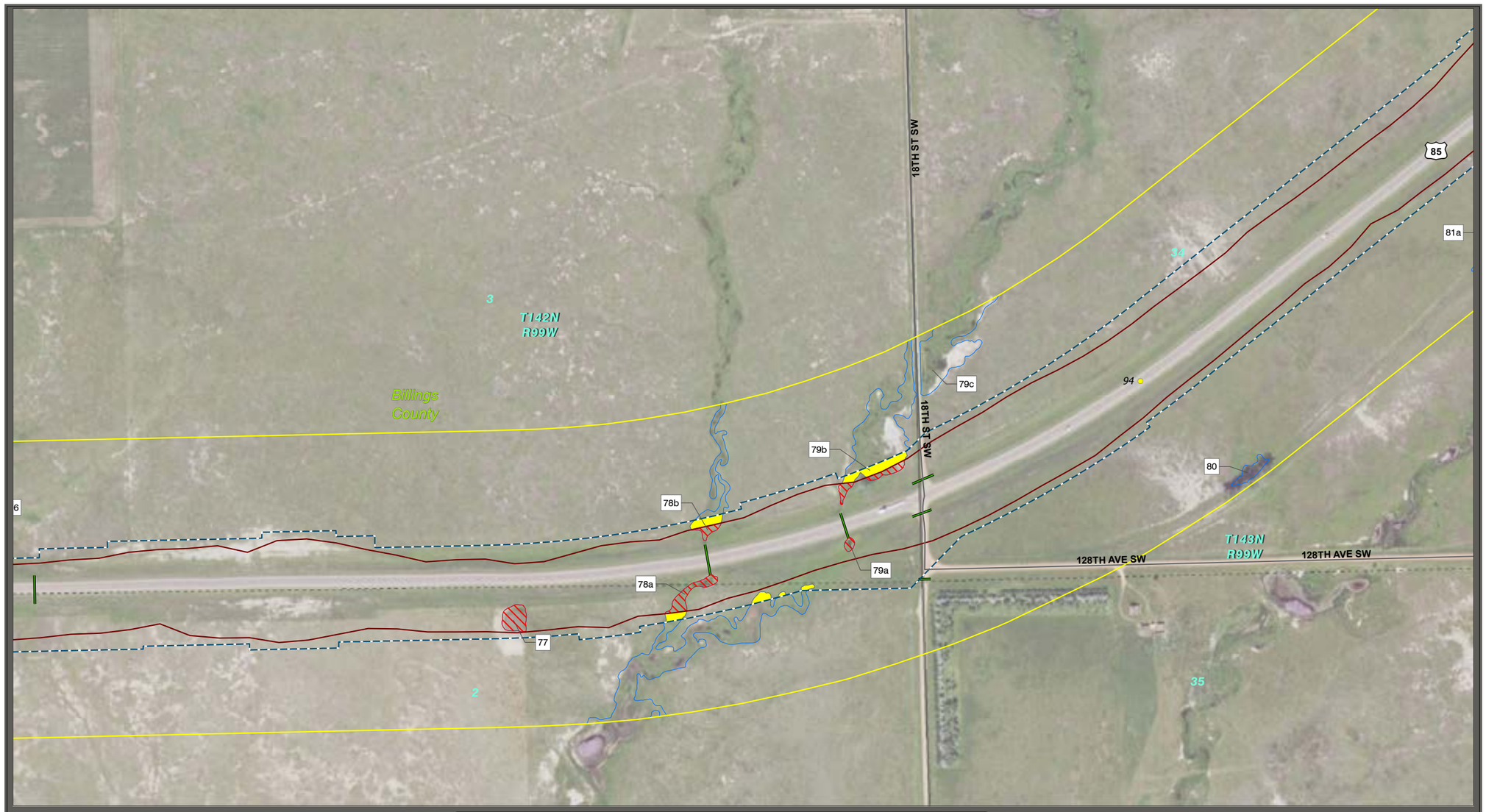
- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

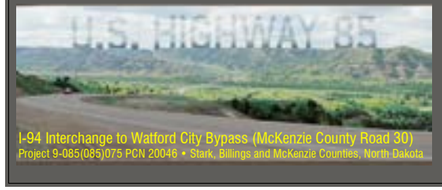
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 19 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT





0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

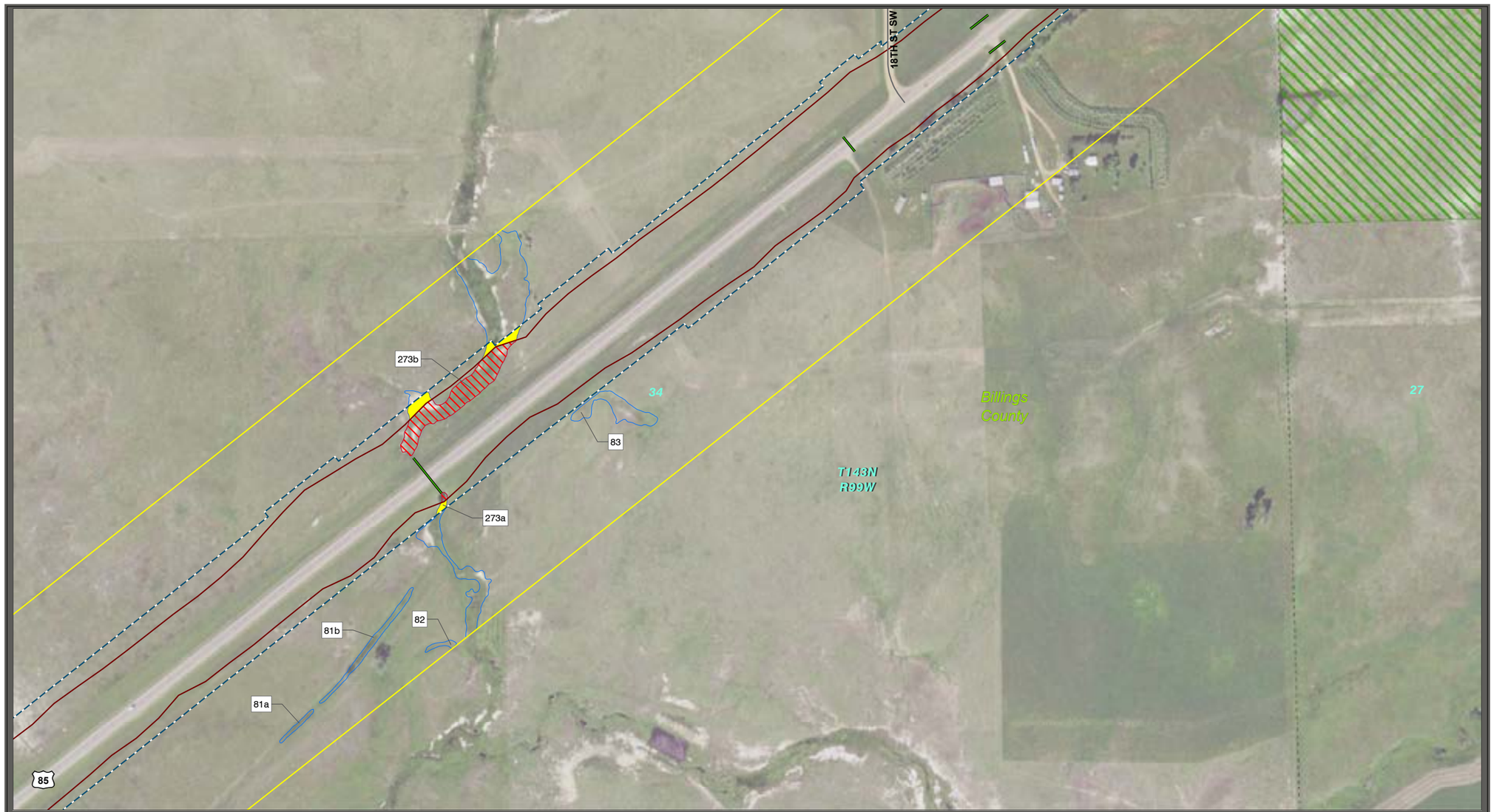
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

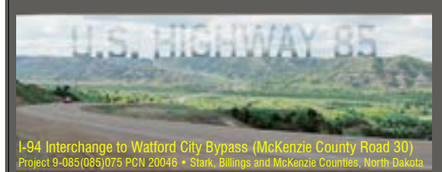
Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 20 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ





0 100 200 Feet

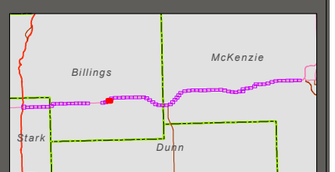
- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

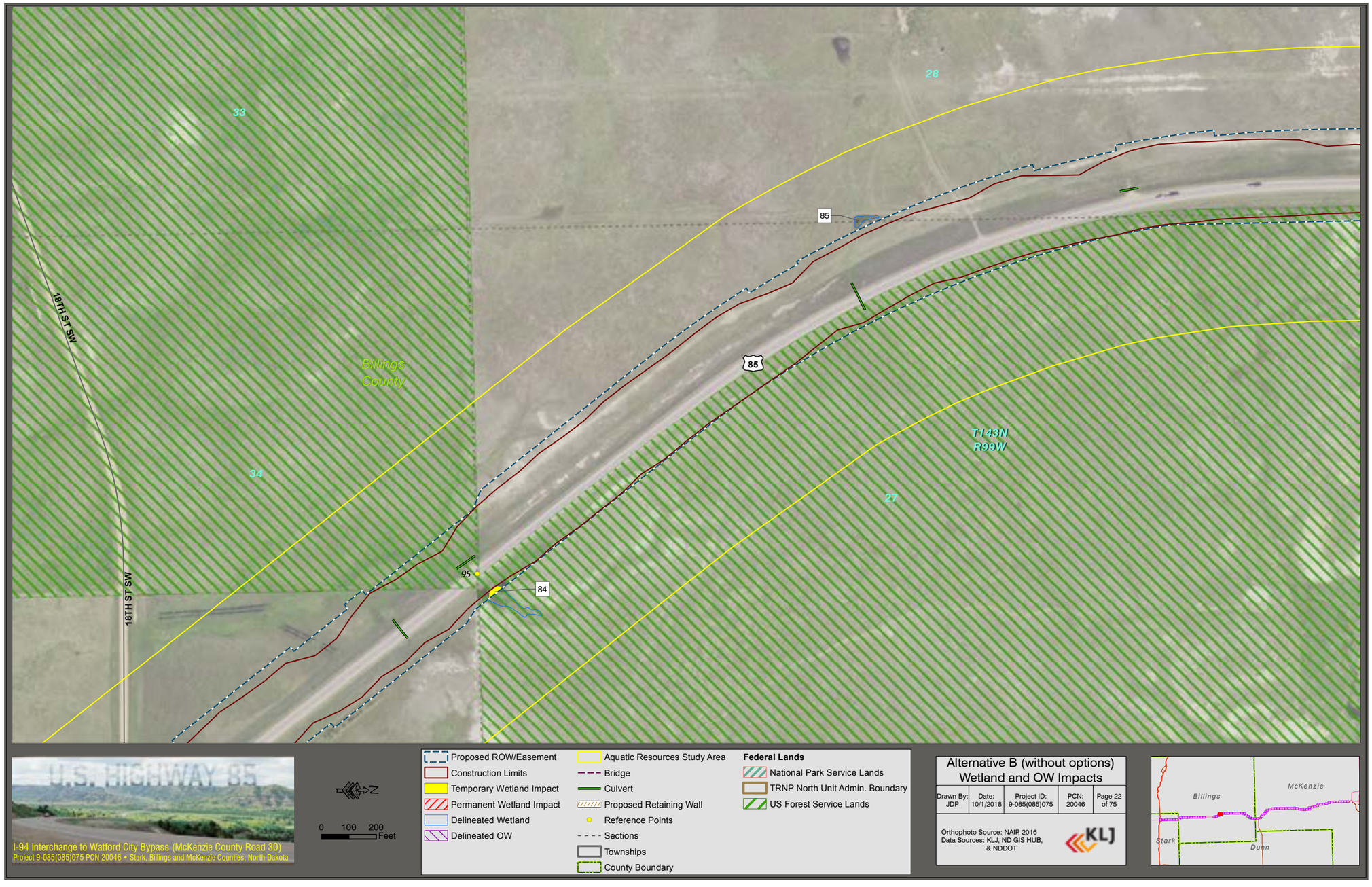
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

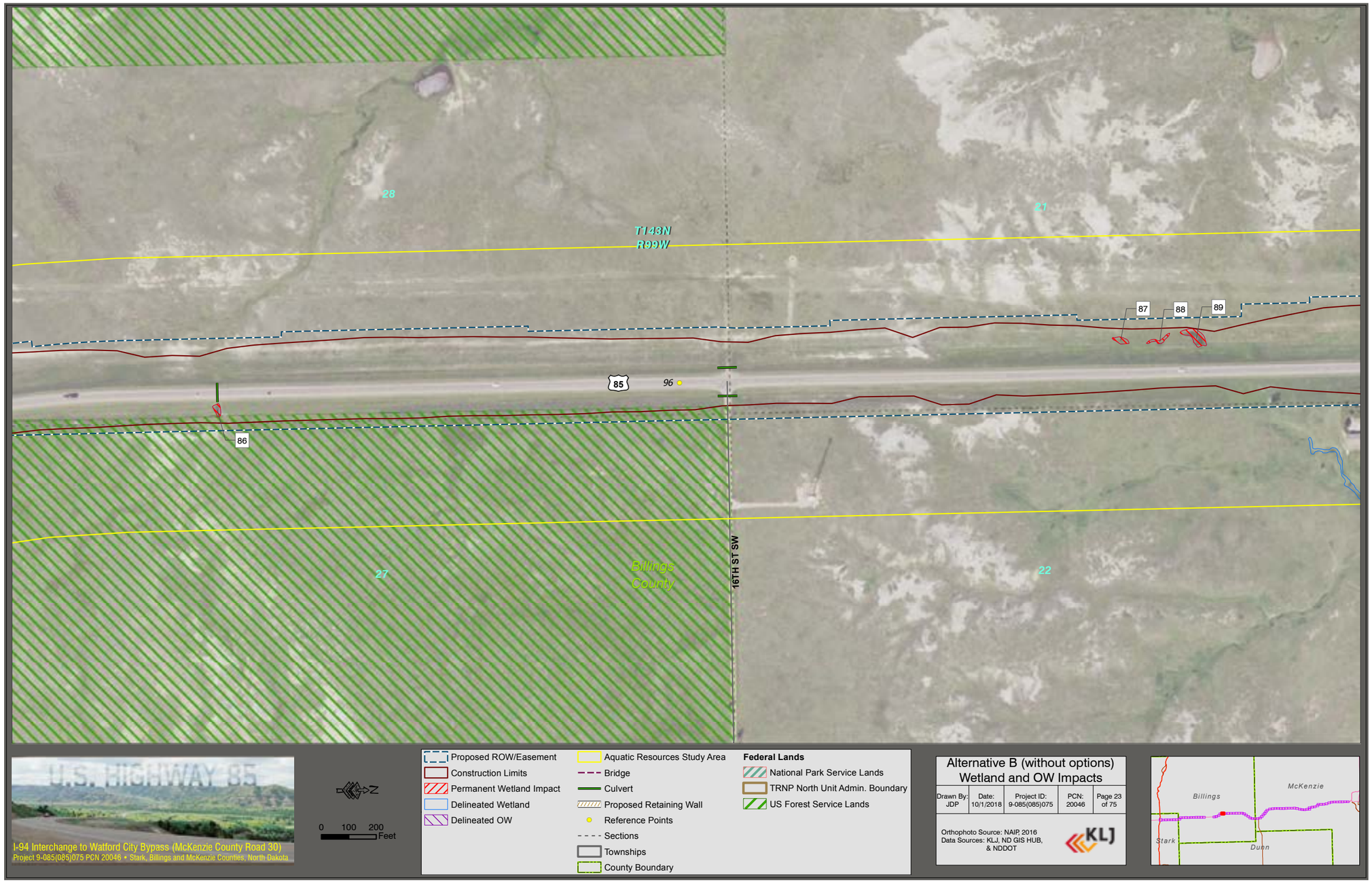
Alternative B (without options) Wetland and OW Impacts

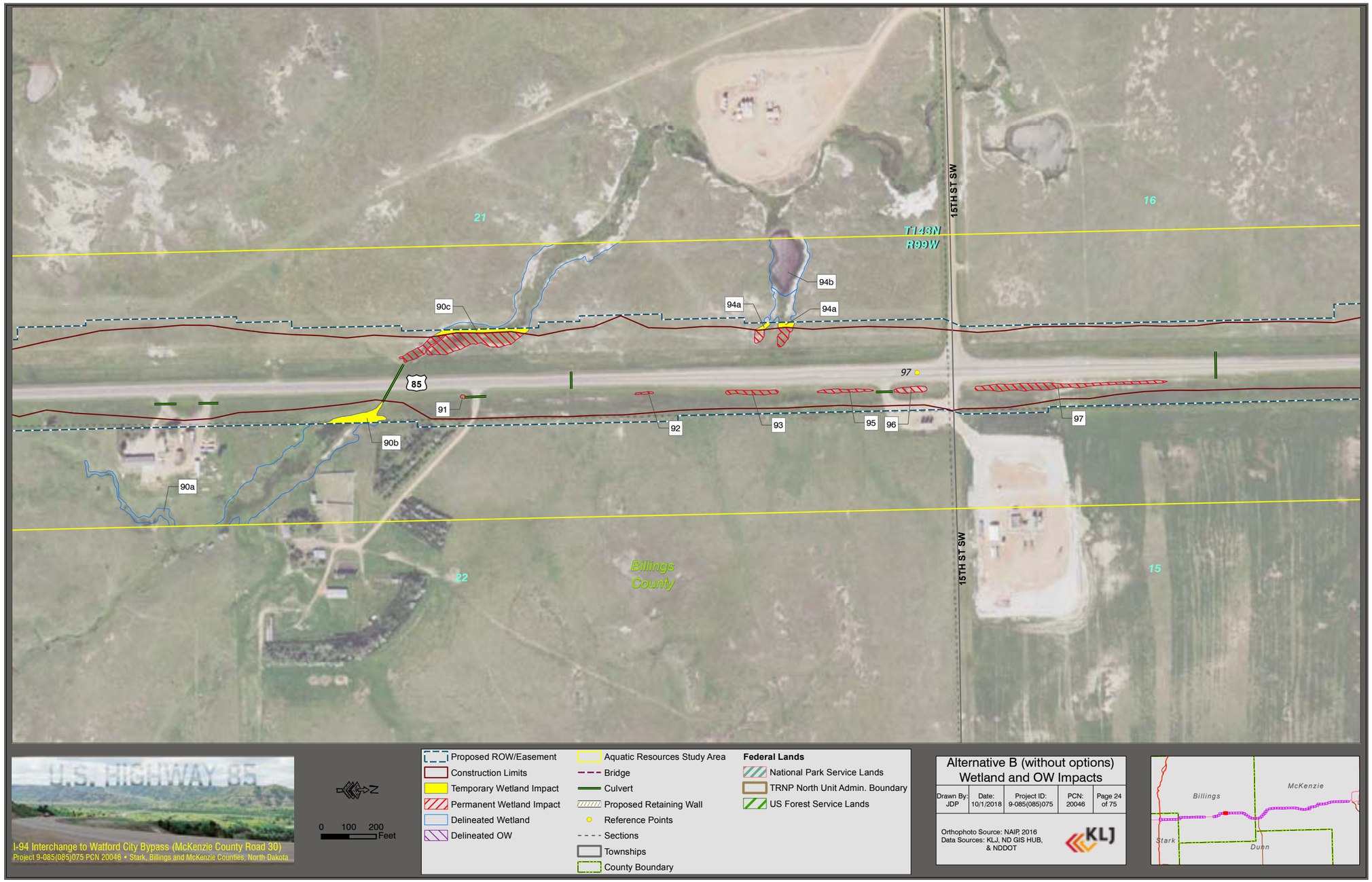
Drawn By:	Date:	Project ID:	PCN:	Page 21 of 75
JDP	10/1/2018	9-085(085)075	20046	

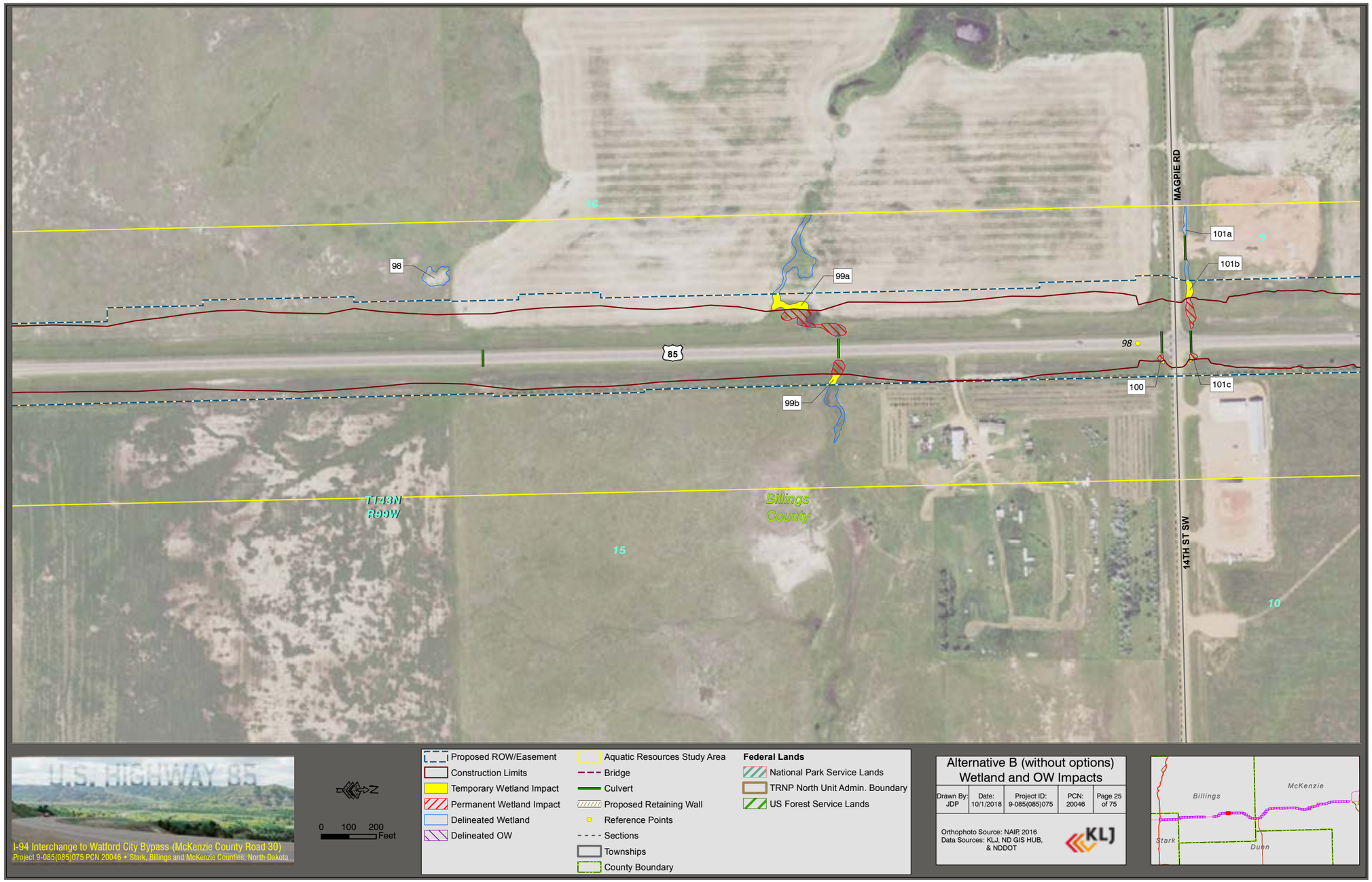
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

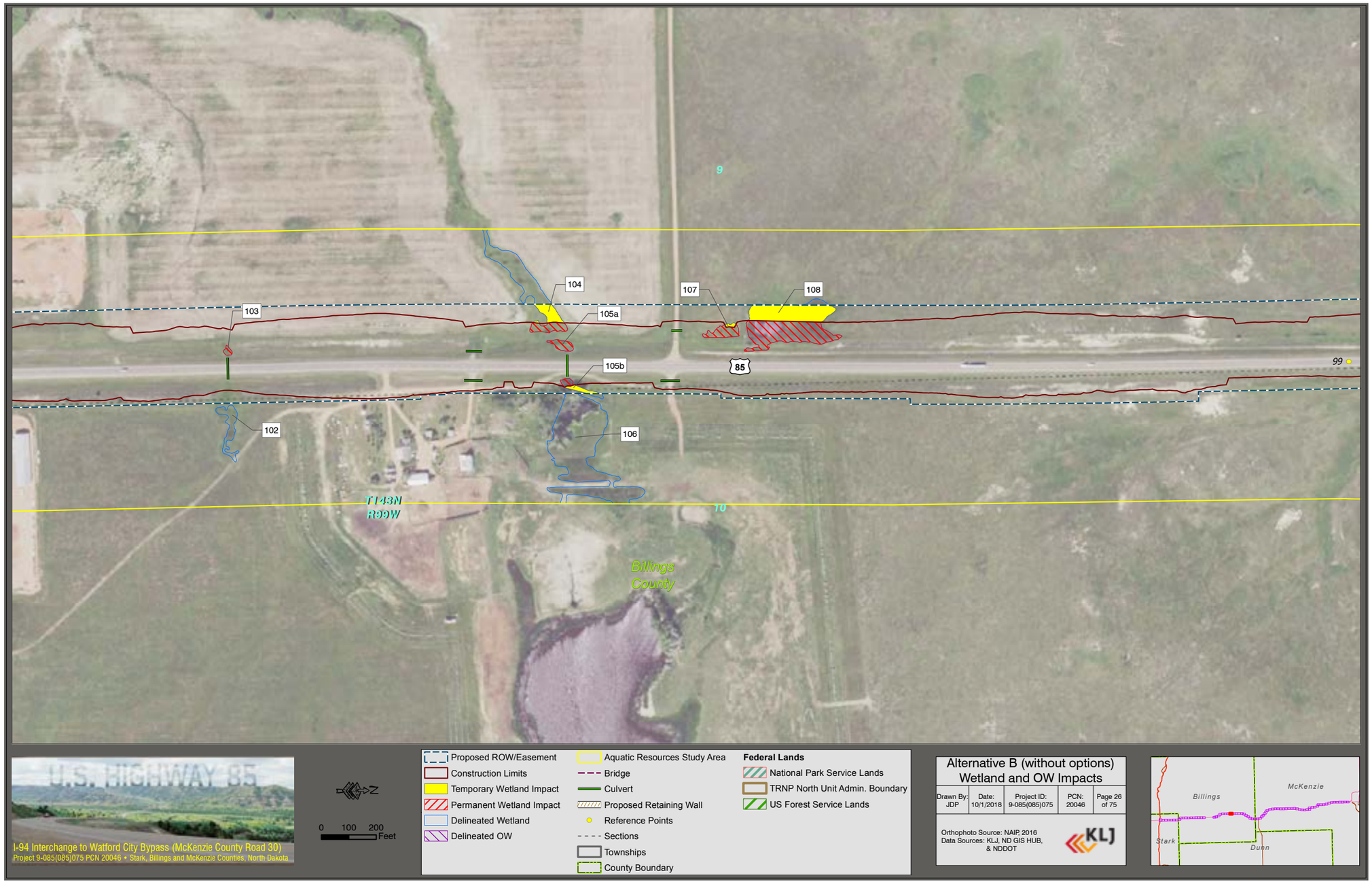



33
28
34
27
T143N
R99W
Billings
County
18TH ST SW
18TH ST SW
85
85
95
84
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 22 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


28
21
T143N
R99W
87
88
89
85
96
86
27
Billings
County
16TH ST SW
22
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 23 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


21
16
15TH ST SW
T143N
R99W
94b
94a
94a
90c
97
85
91
92
93
95
96
97
90b
90a
Billings
County
22
15TH ST SW
15
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 24 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


MAGPIE RD
14TH ST SW
98
99a
99b
100
101a
101b
101c
85
T143N
R99W
Billings
County
16
15
10
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
0 100 200 Feet
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 25 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

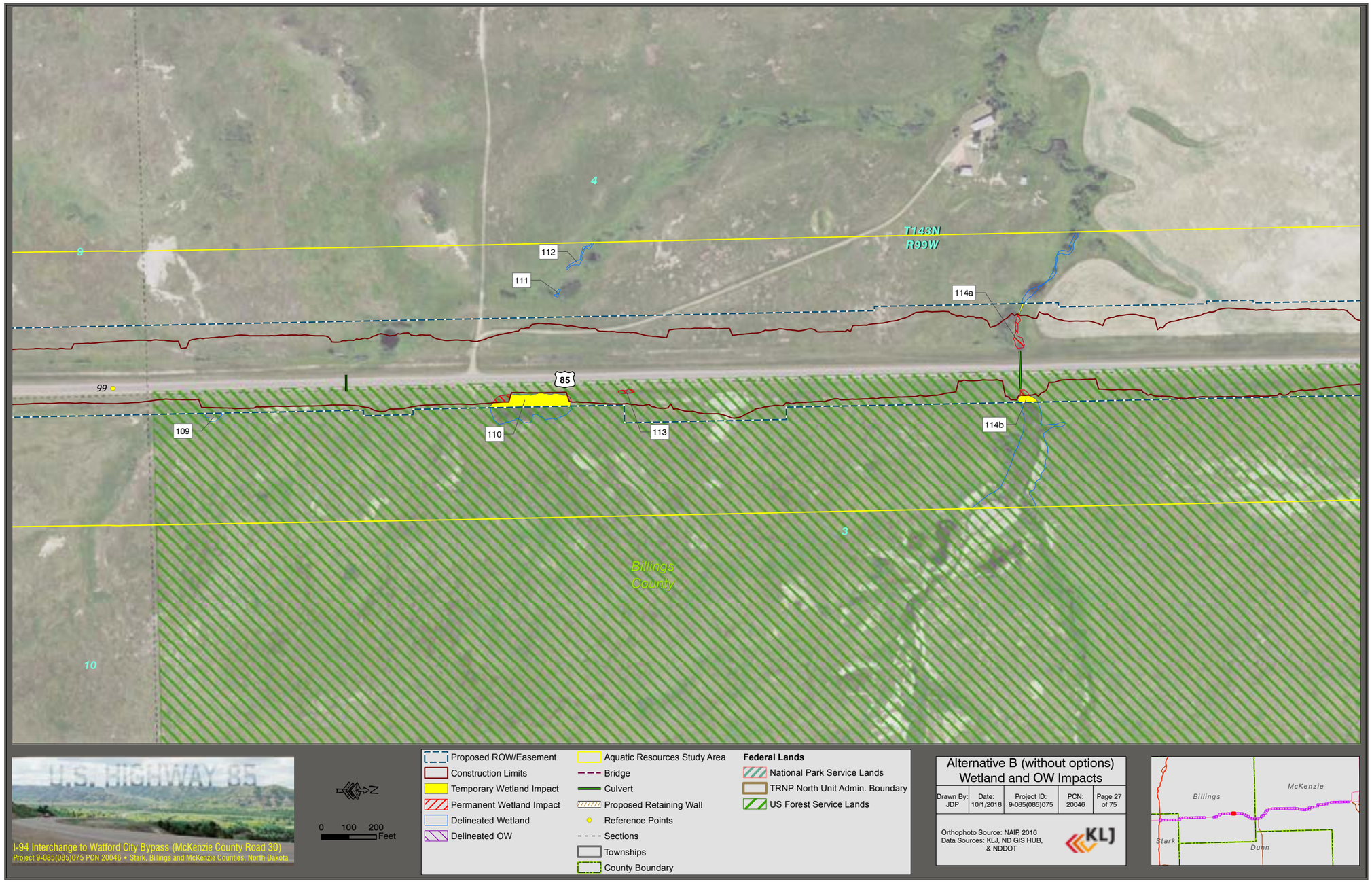
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

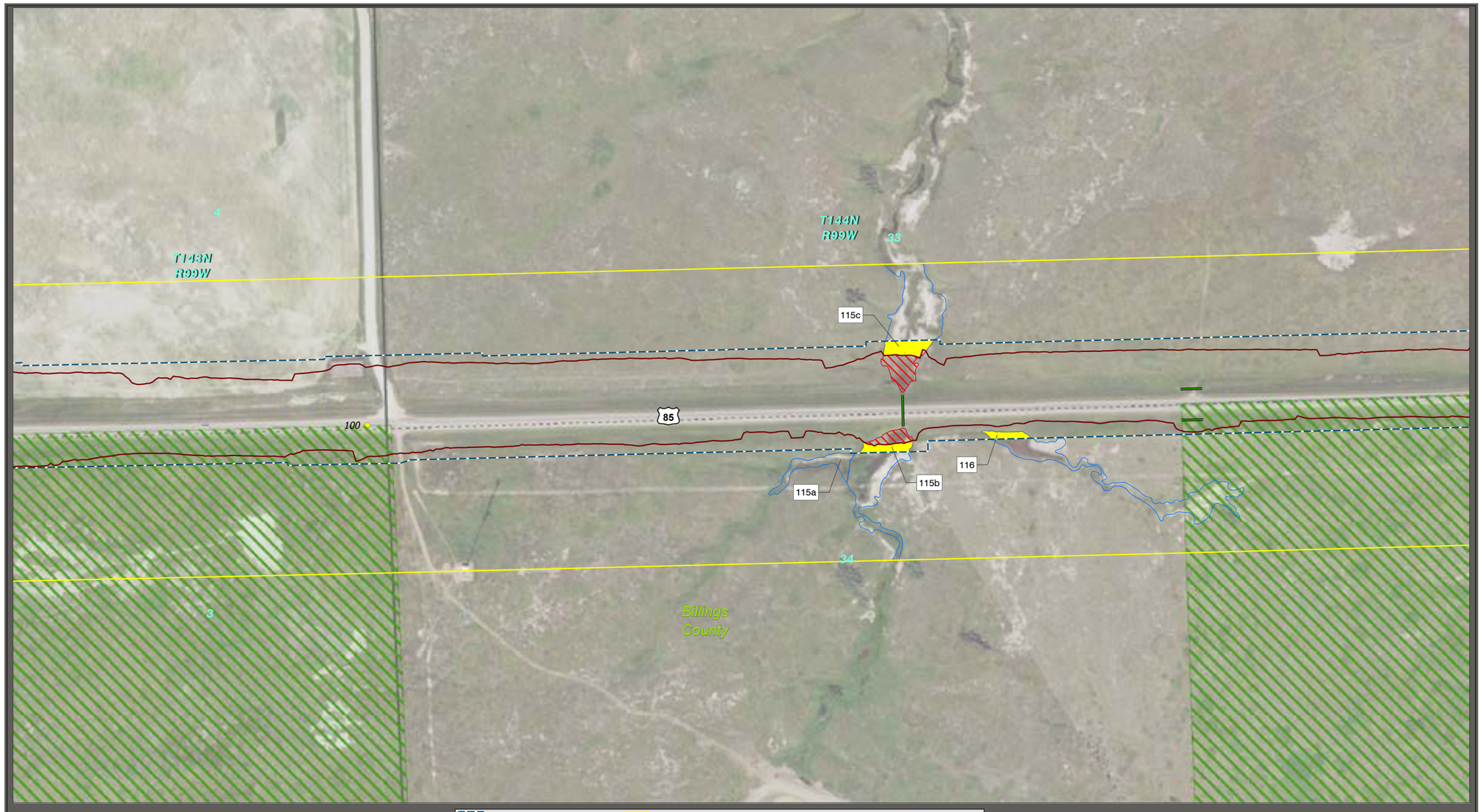
Alternative B (without options) Wetland and OW Impacts

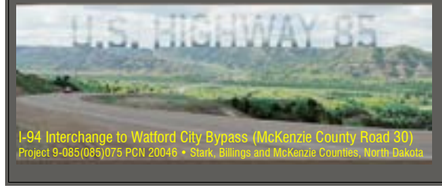
Drawn By:	Date:	Project ID:	PCN:	Page 26 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


T143N
R99W
4
9
3
10
99
112
111
114a
114b
109
110
113
85
Billings
County
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 27 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn





0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

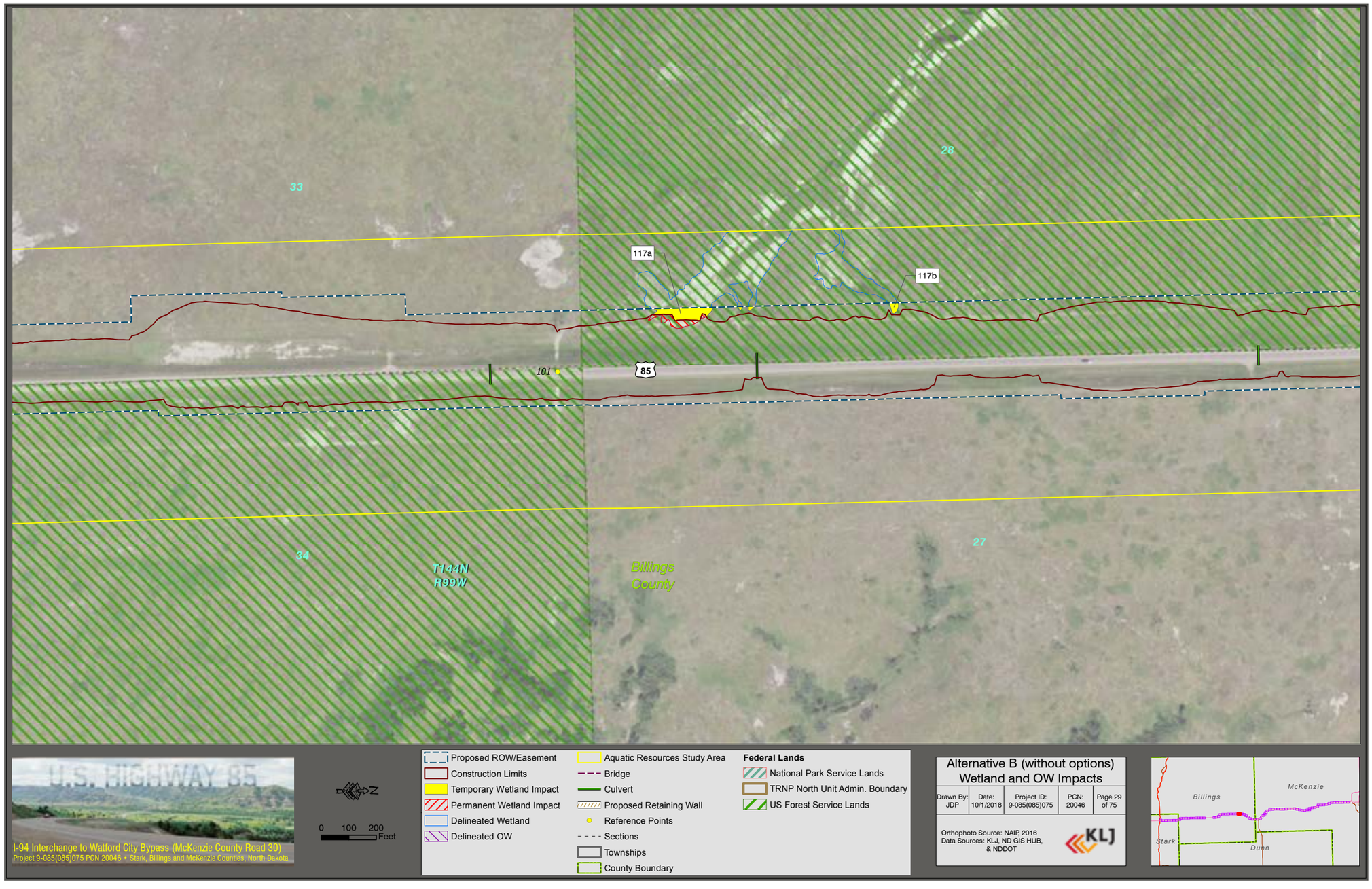
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

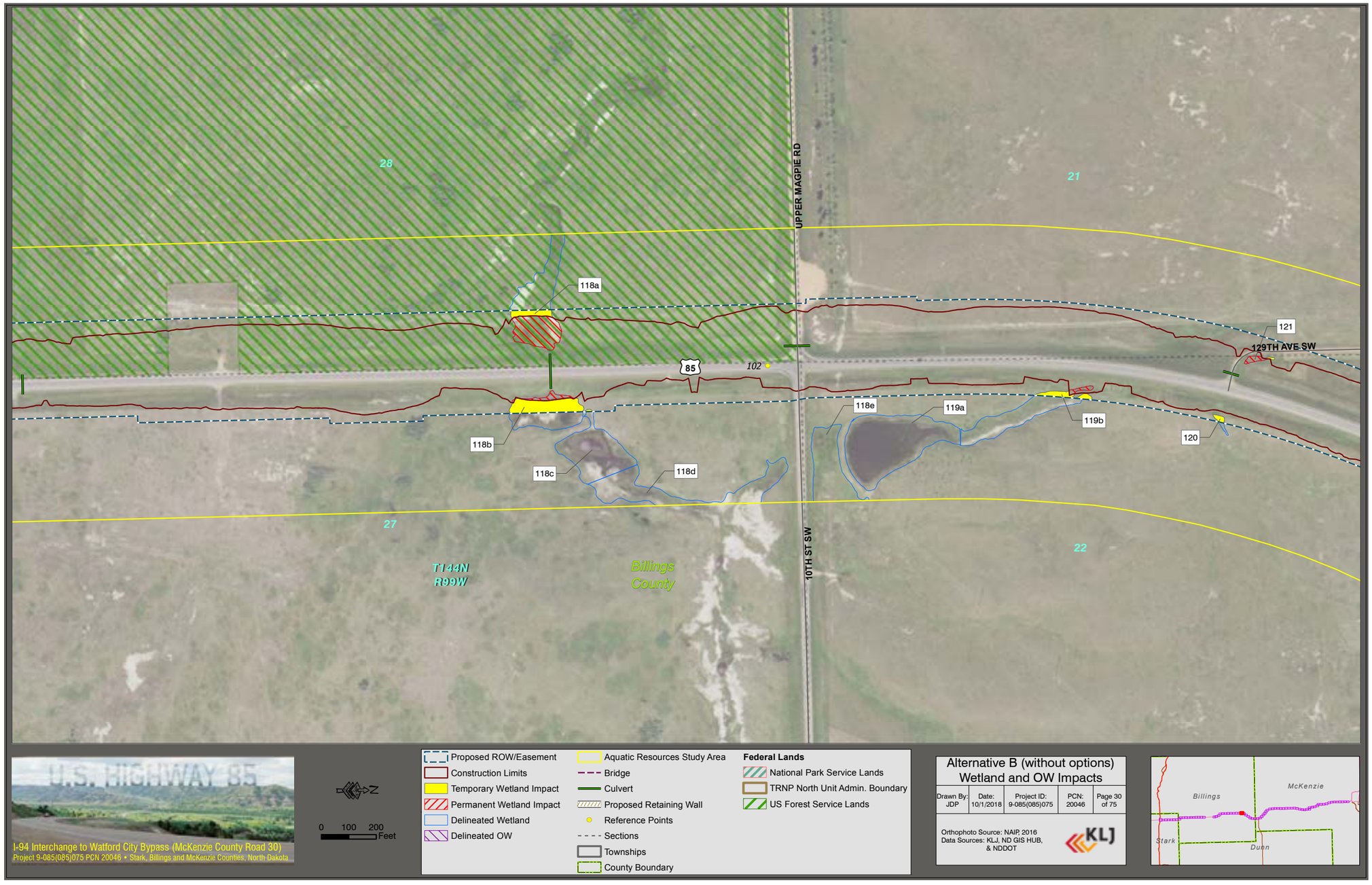
Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 28 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


33
28
117a
117b
101
85
34
T144N
R99W
Billings
County
27
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 29 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

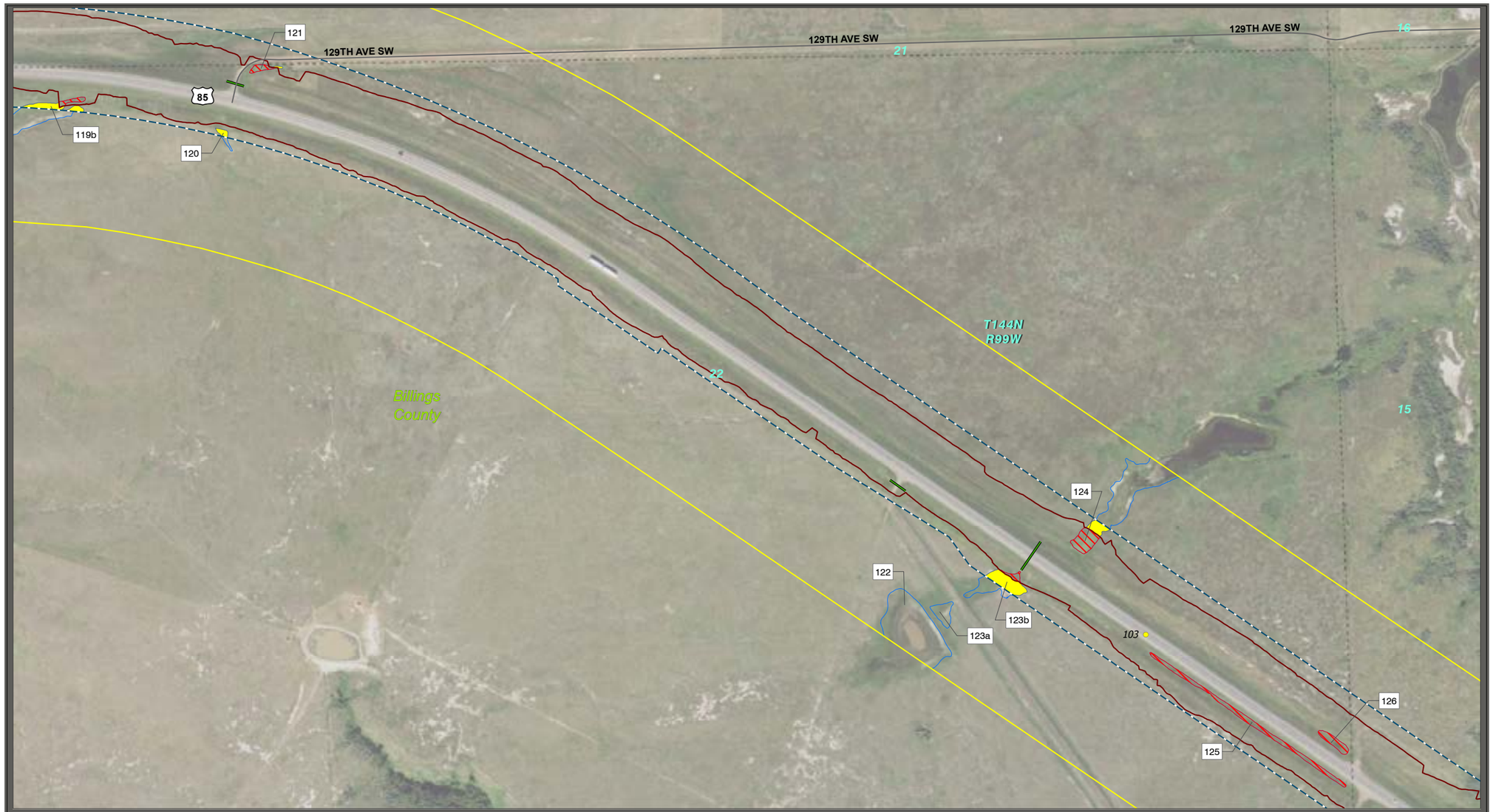
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

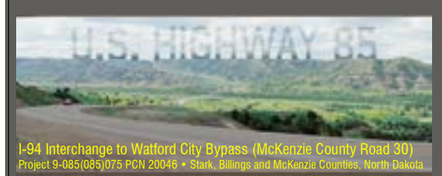
Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 30 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

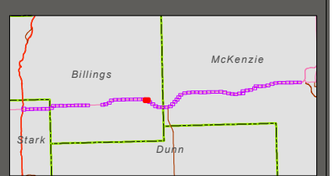
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

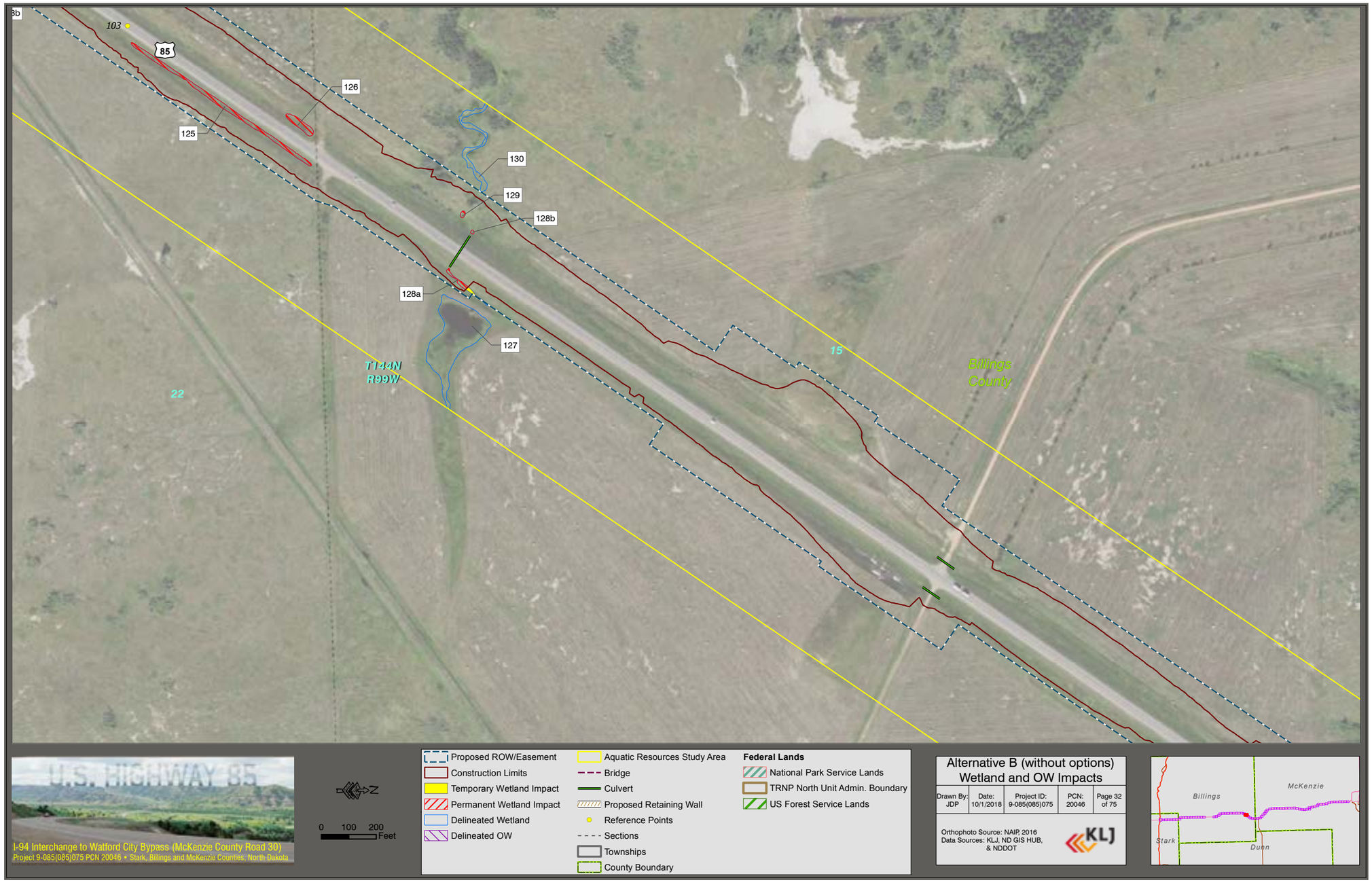
Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 31 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

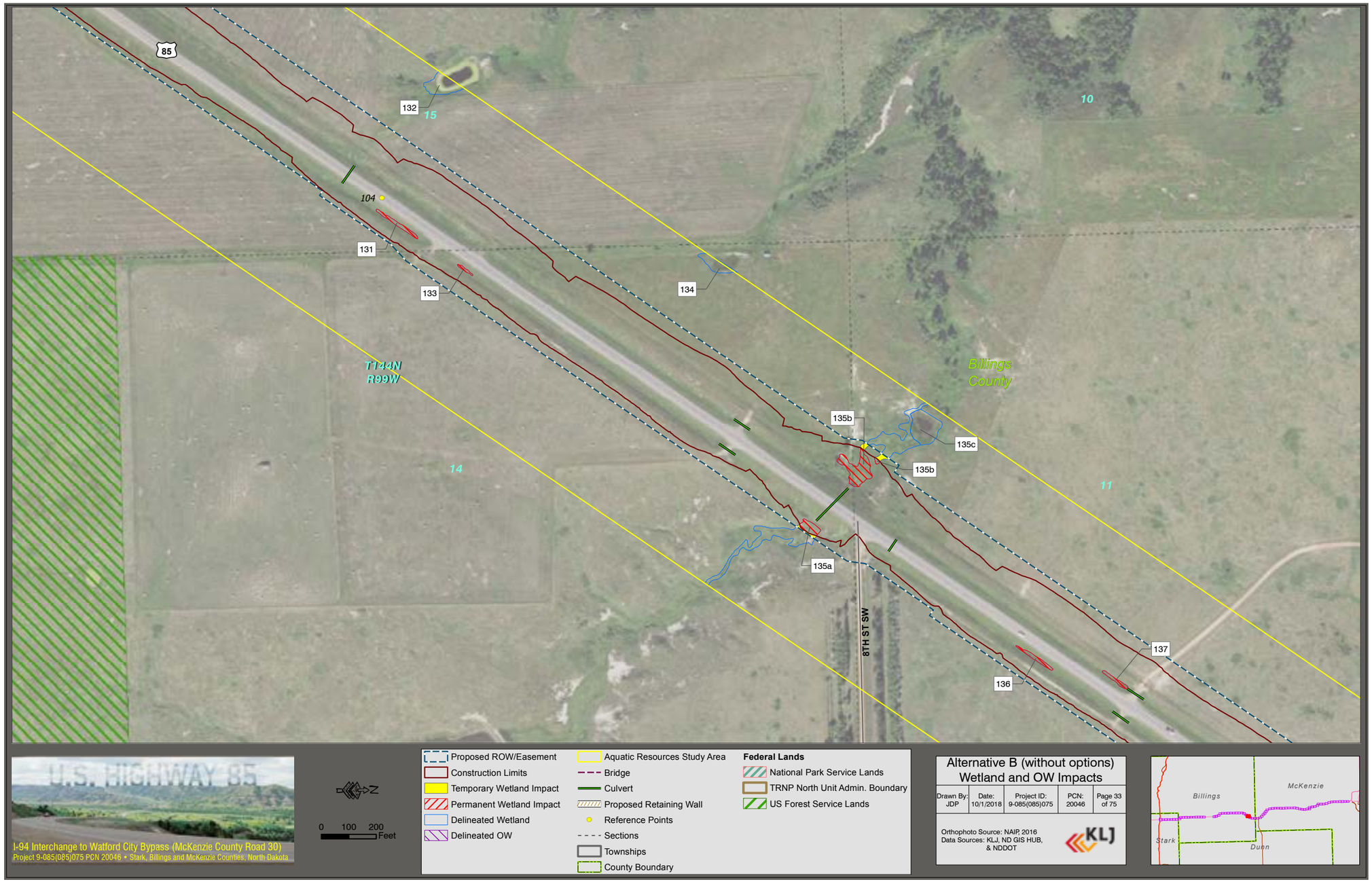
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

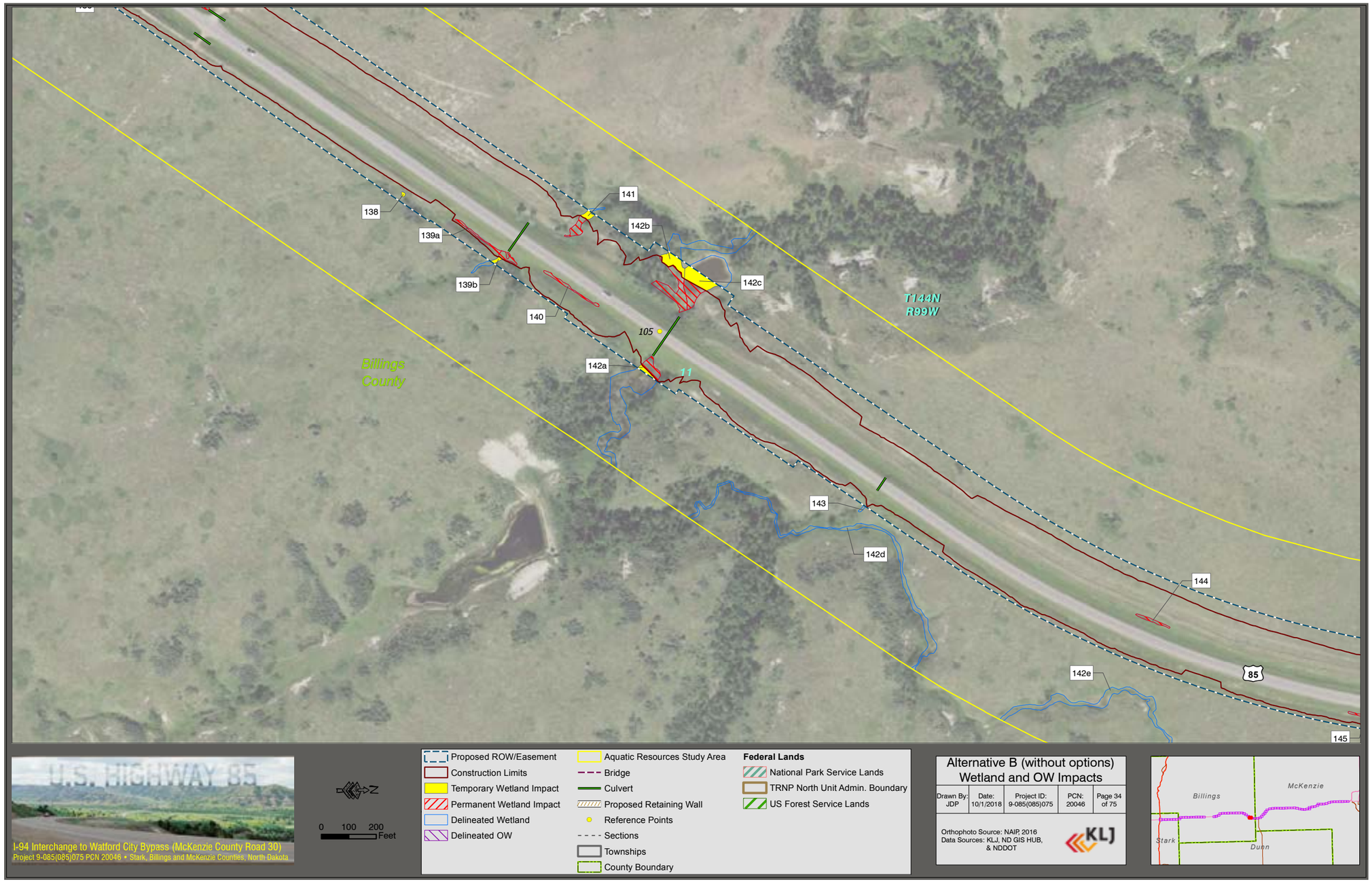
Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 32 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


85
132
15
104
131
133
134
10
T144N
R99W
Billings
County
135b
135c
135b
14
11
135a
8TH ST SW
137
136
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 33 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

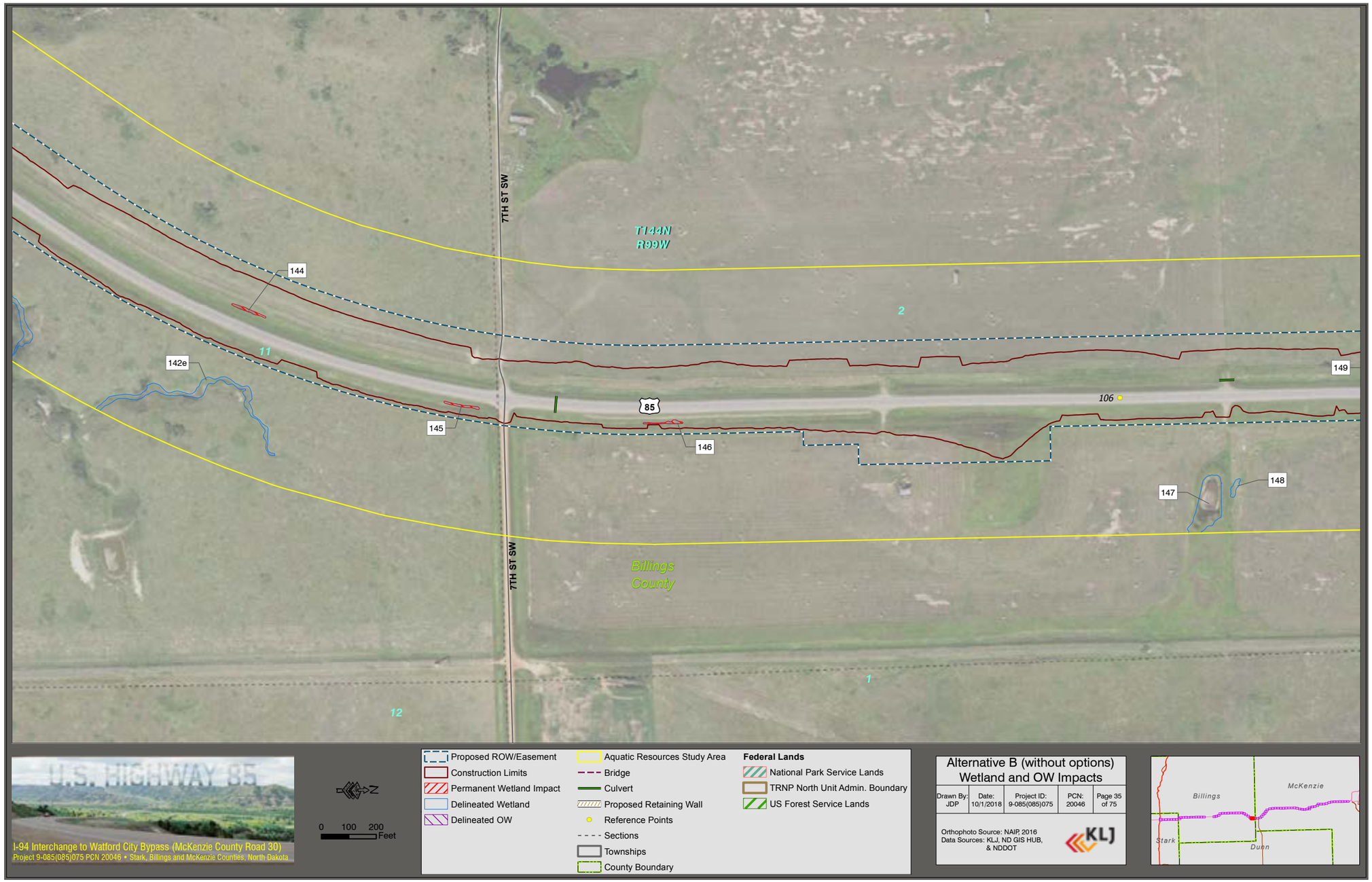
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

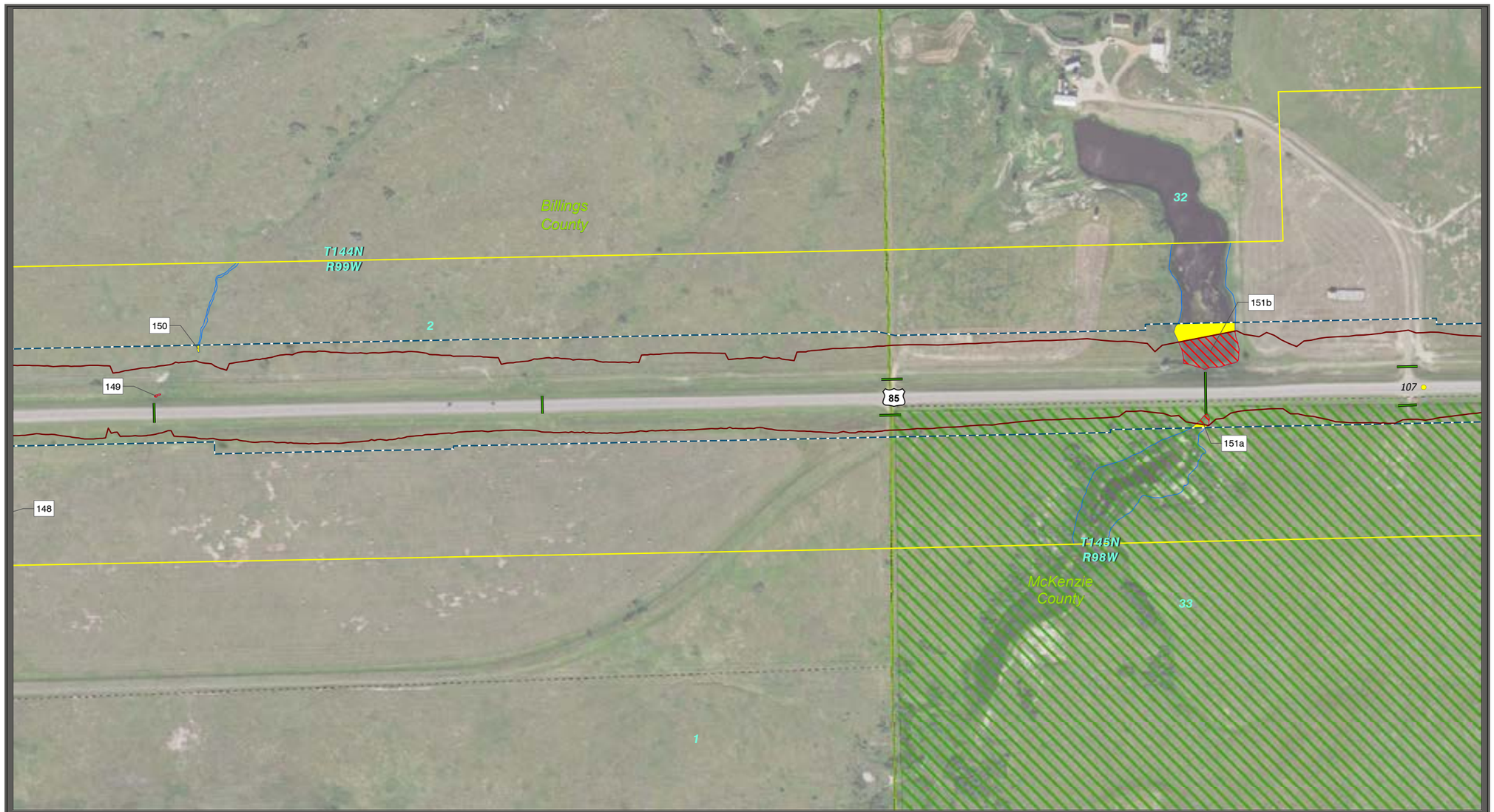
Alternative B (without options) Wetland and OW Impacts

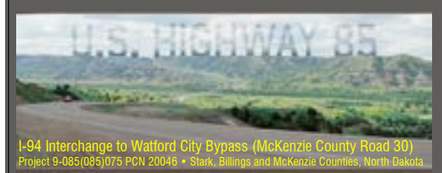
Drawn By:	Date:	Project ID:	PCN:	Page 34 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


7TH ST SW
T144N
R99W
144
142e
11
2
149
106
85
145
146
147
148
Billings
County
7TH ST SW
1
12
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 35 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

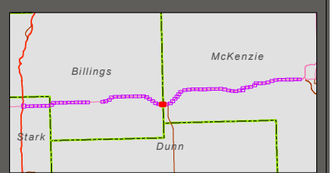
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

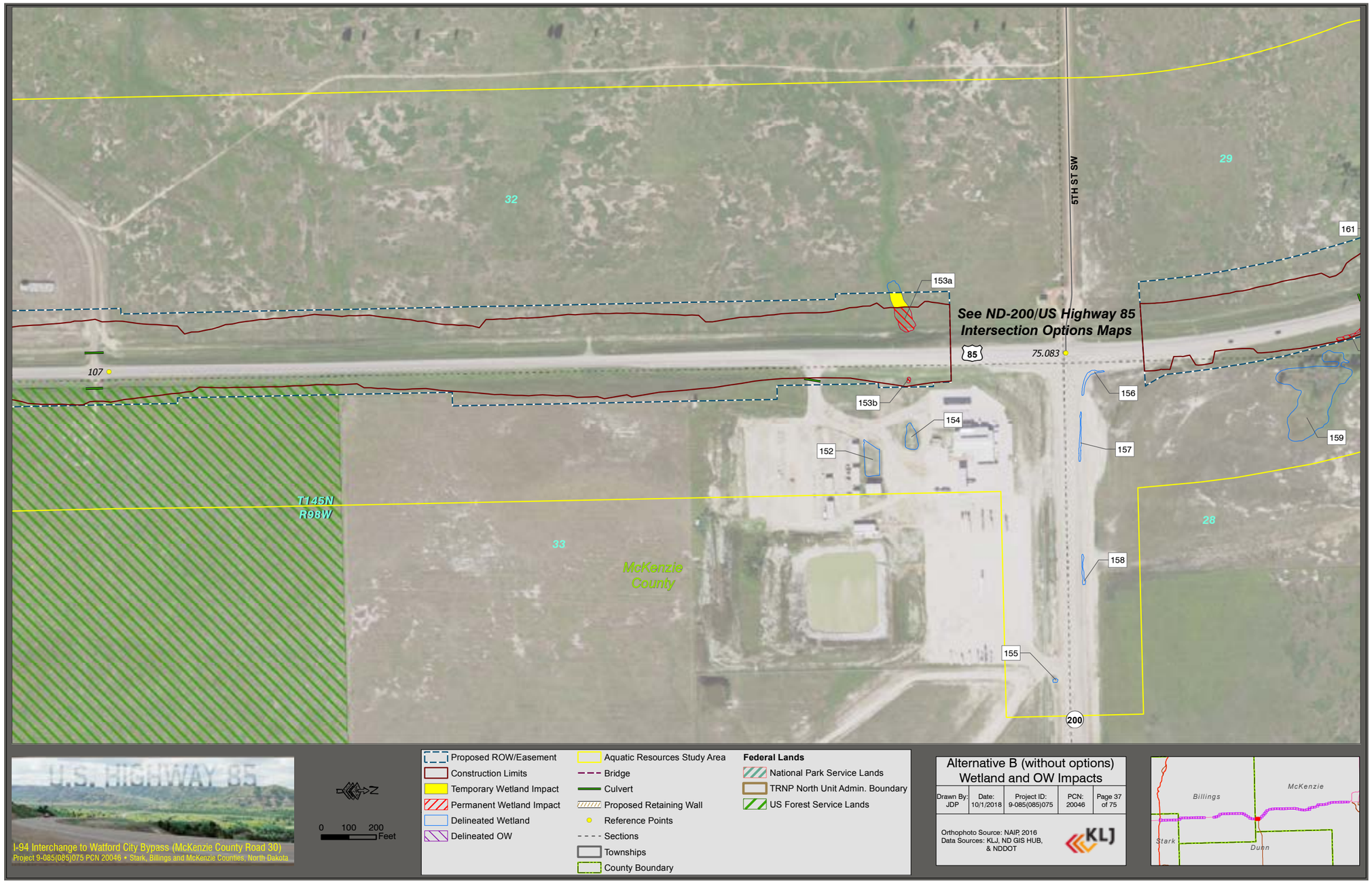
Alternative B (without options) Wetland and OW Impacts

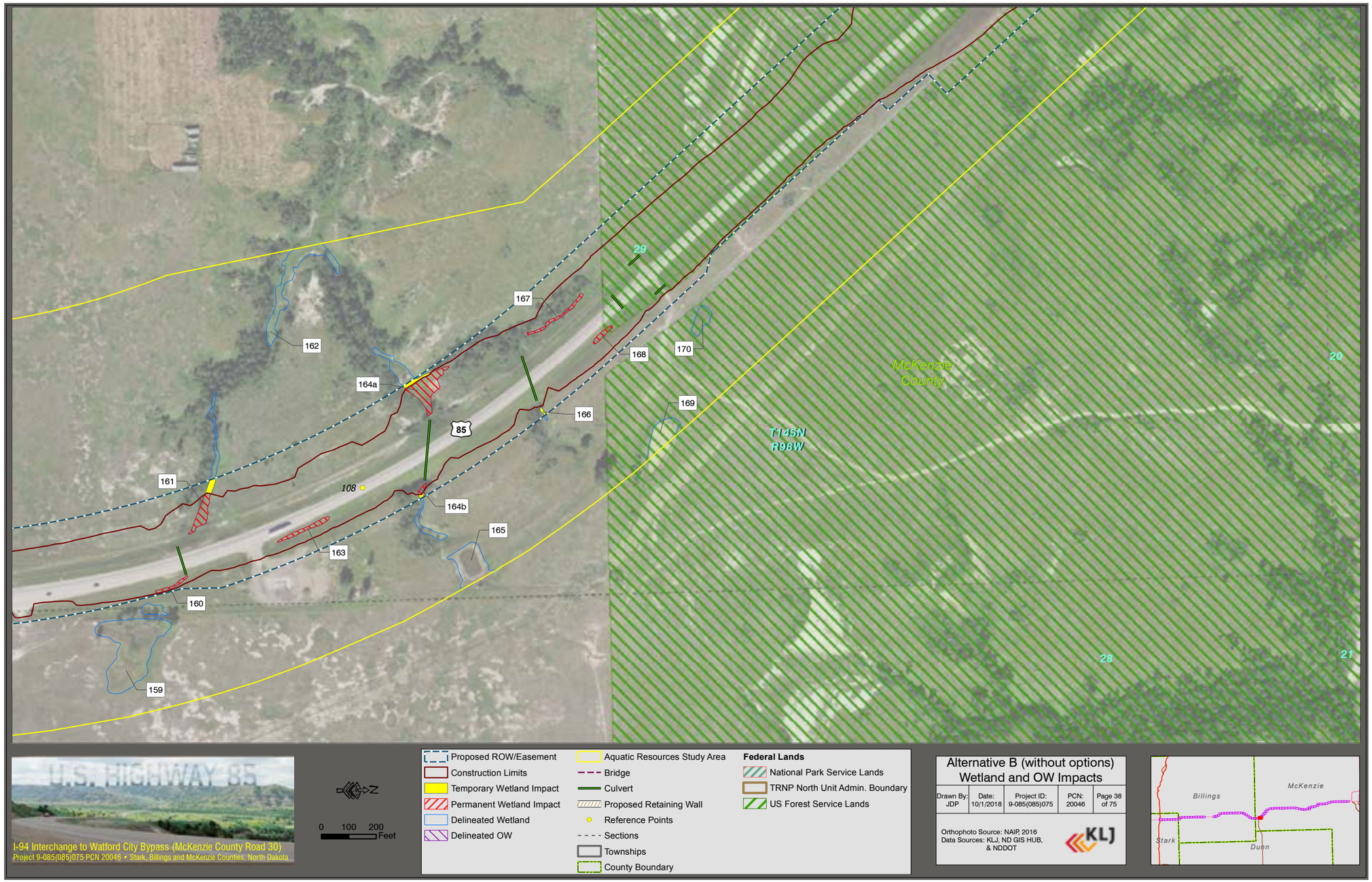
Drawn By:	Date:	Project ID:	PCN:	Page 36 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ




32
29
28
33
T145N
R98W
McKenzie
County
5TH ST SW
See ND-200/US Highway 85
Intersection Options Maps
85
200
75.083
107
153a
153b
154
152
155
156
157
158
159
161
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
0 100 200 Feet
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 37 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota



I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota

N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

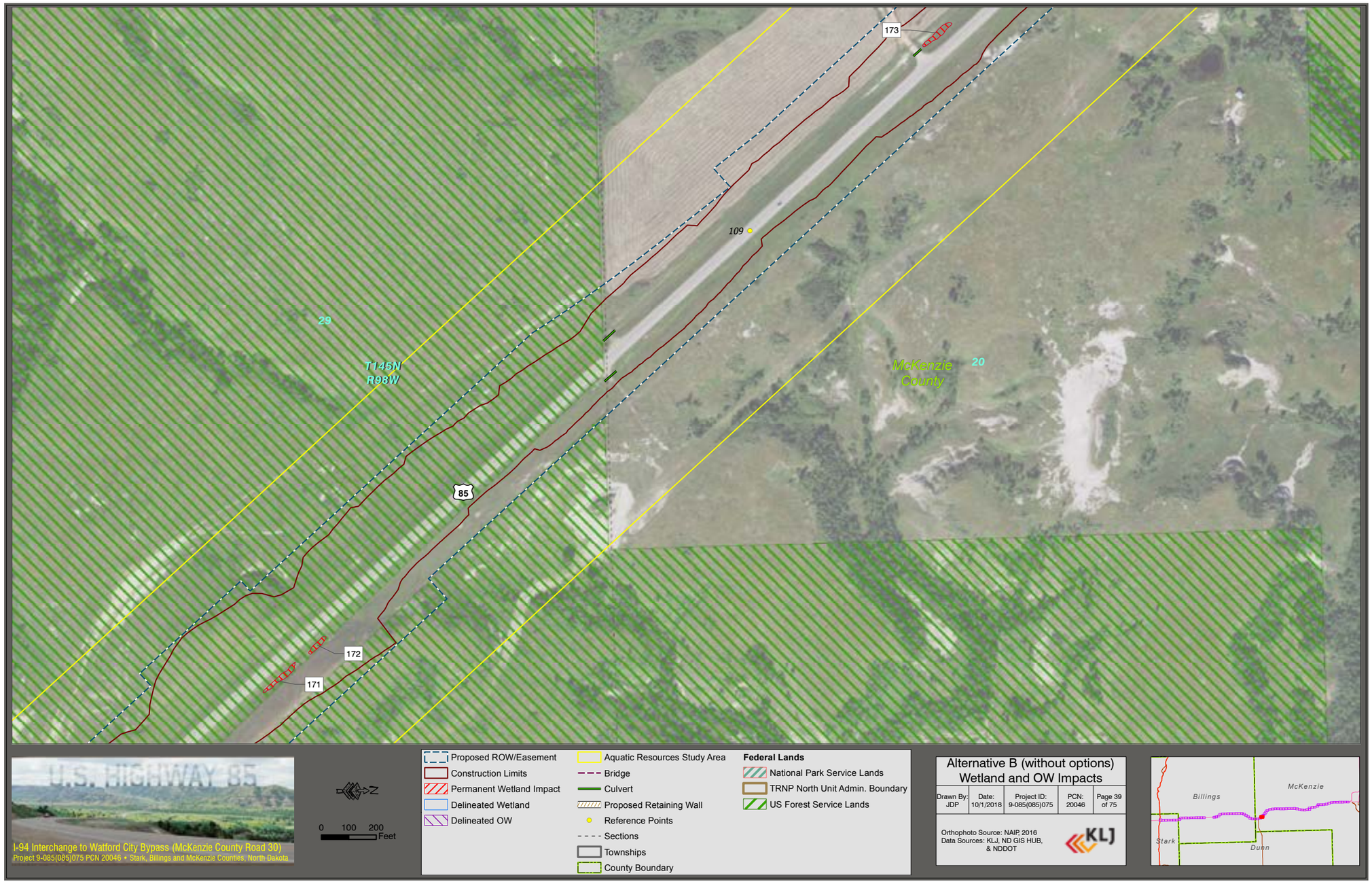
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

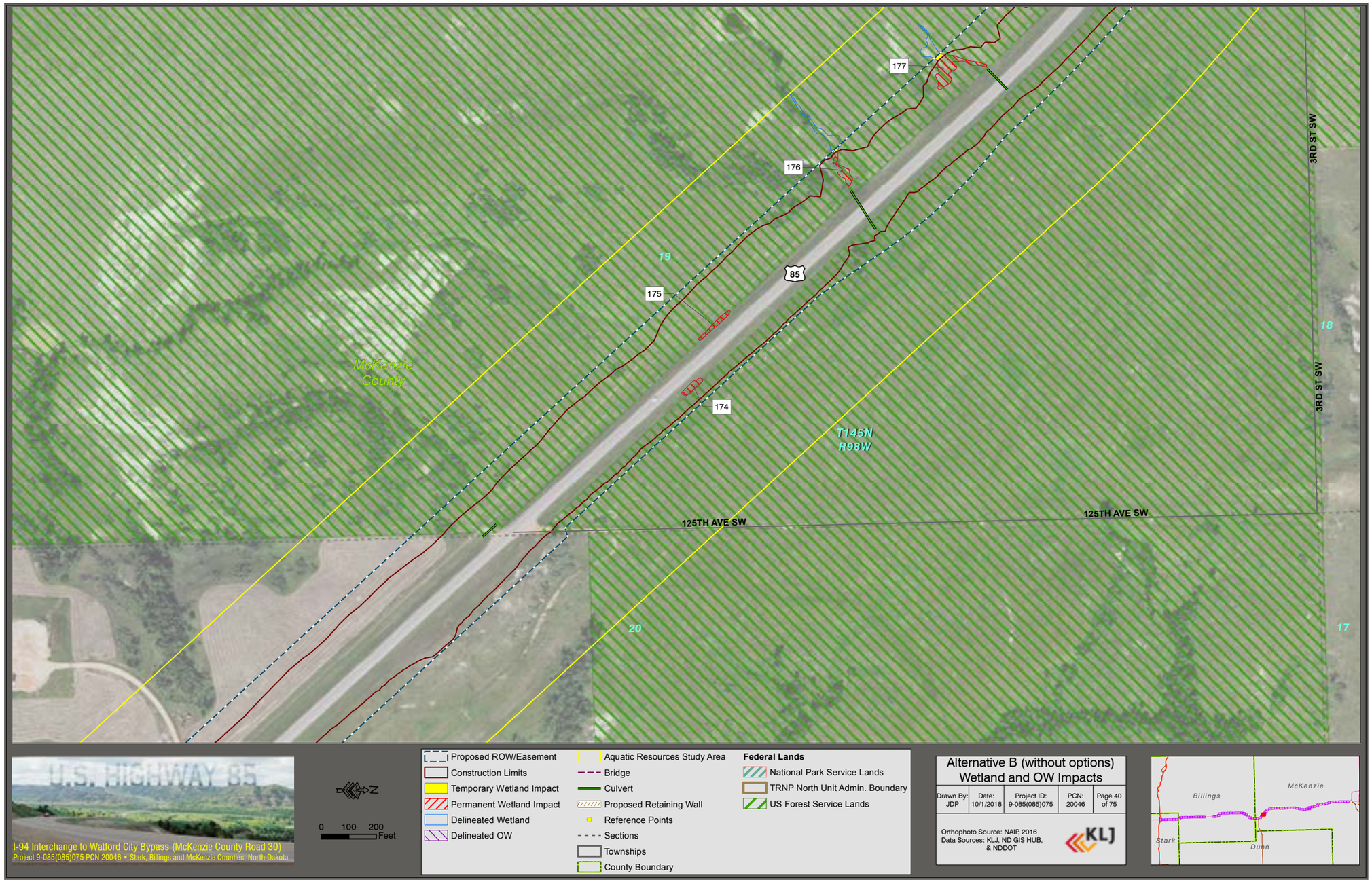
Alternative B (without options) Wetland and OW Impacts

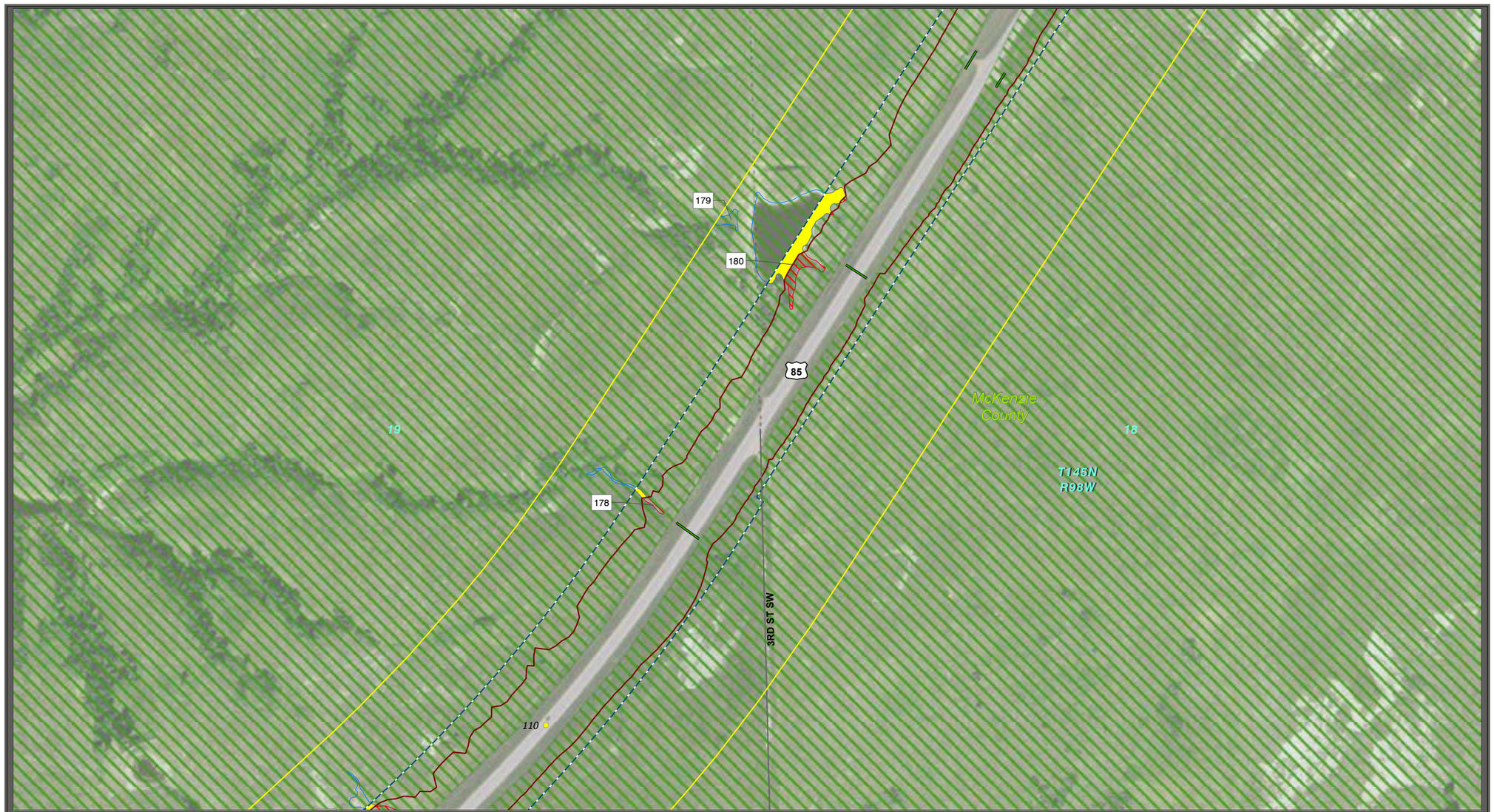
Drawn By:	Date:	Project ID:	PCN:	Page 38 of 75
JDP	10/1/2018	9-085(085)075	20046	

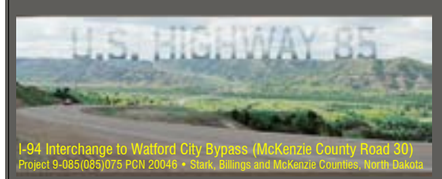
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


173
109
29
T145N
R98W
McKenzie
County
20
85
172
171
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 39 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


177
176
175
174
19
18
17
20
85
McKenzie County
T145N
R98W
3RD ST SW
3RD ST SW
125TH AVE SW
125TH AVE SW
0 100 200 Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 40 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn





0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

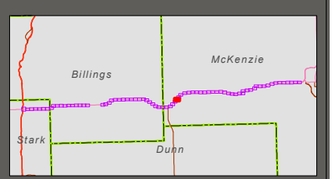
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

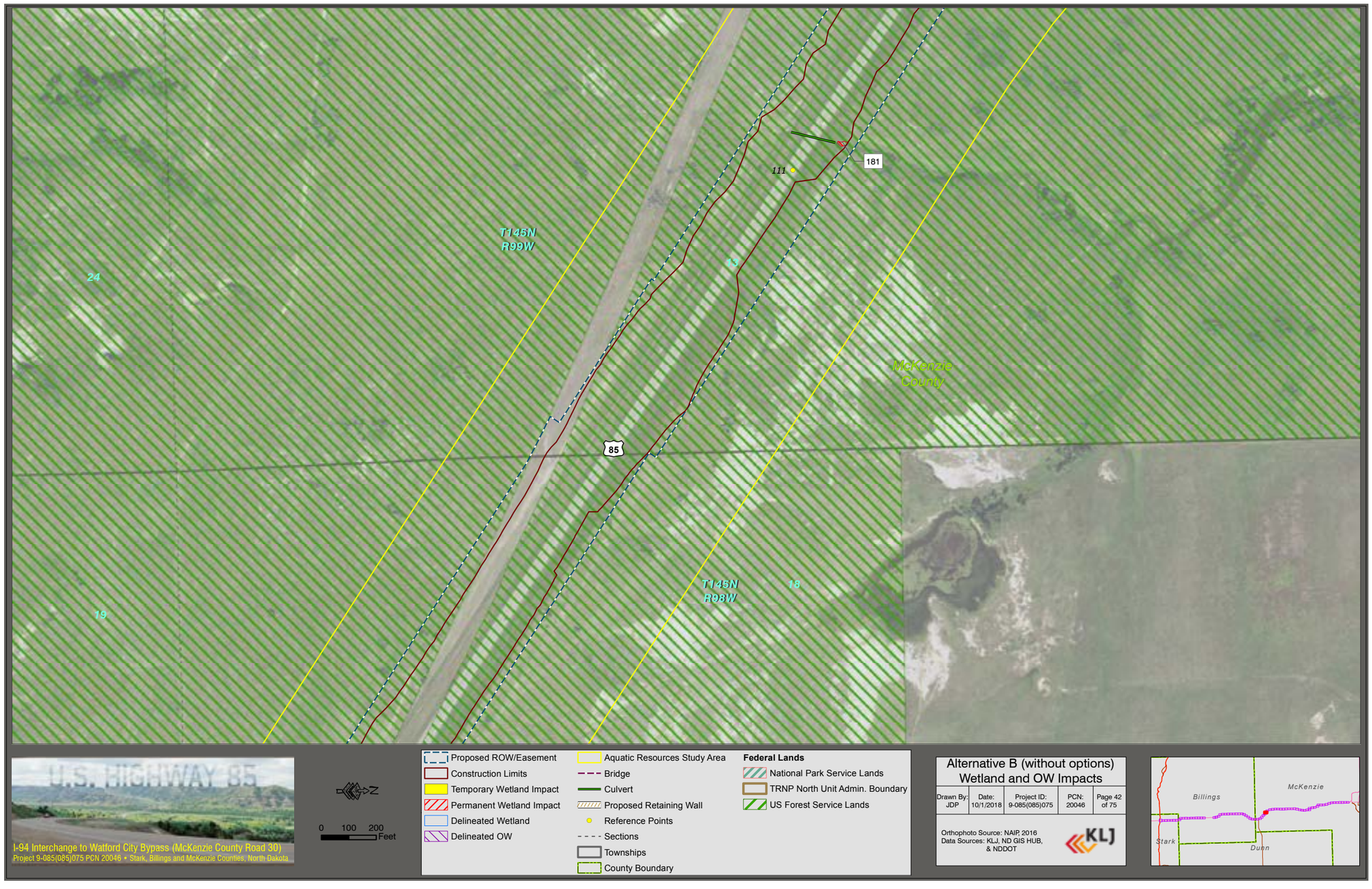
Alternative B (without options) Wetland and OW Impacts

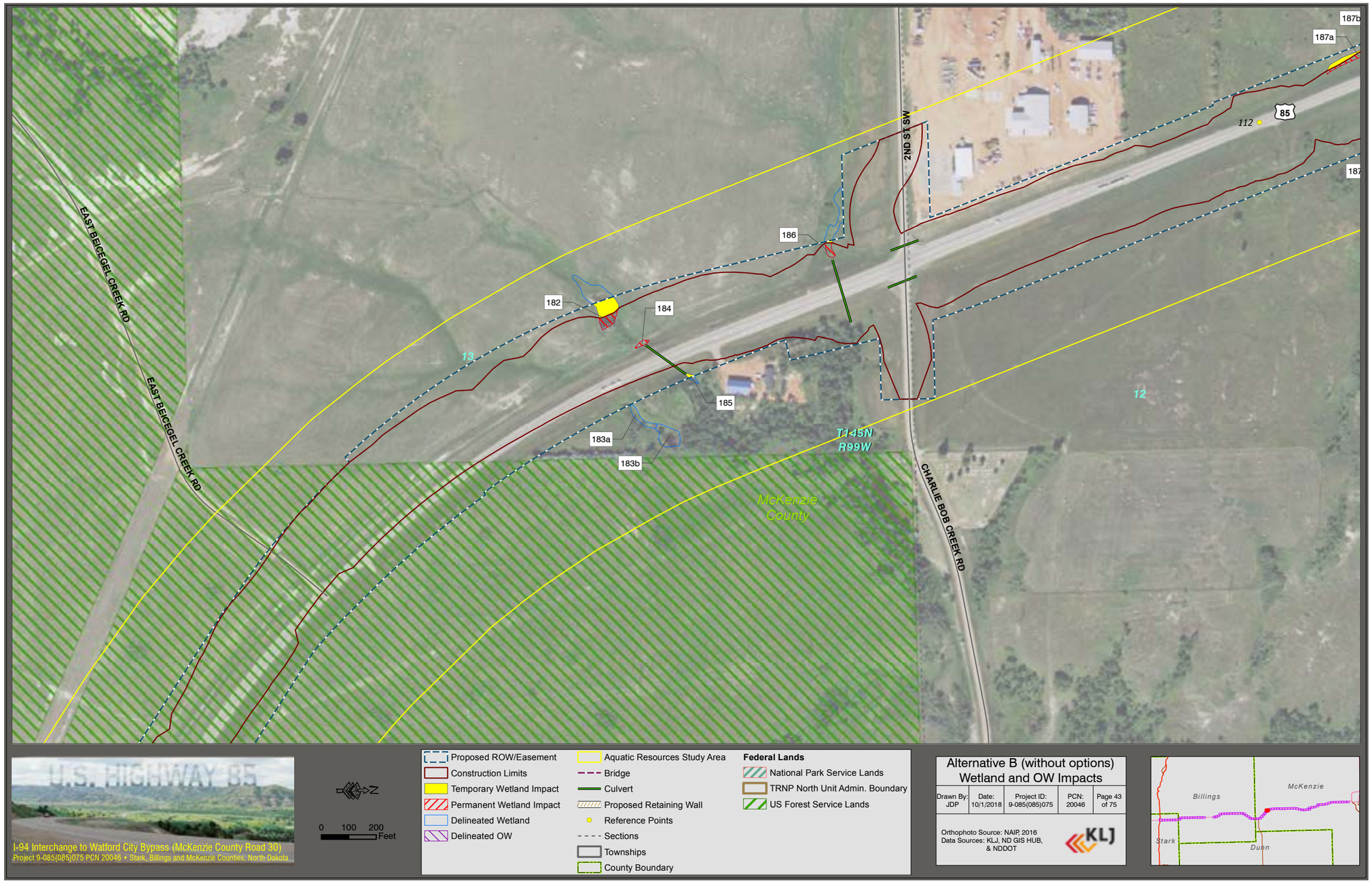
Drawn By:	Date:	Project ID:	PCN:	Page 41 of 75
JDP	10/1/2018	9-085(085)075	20046	

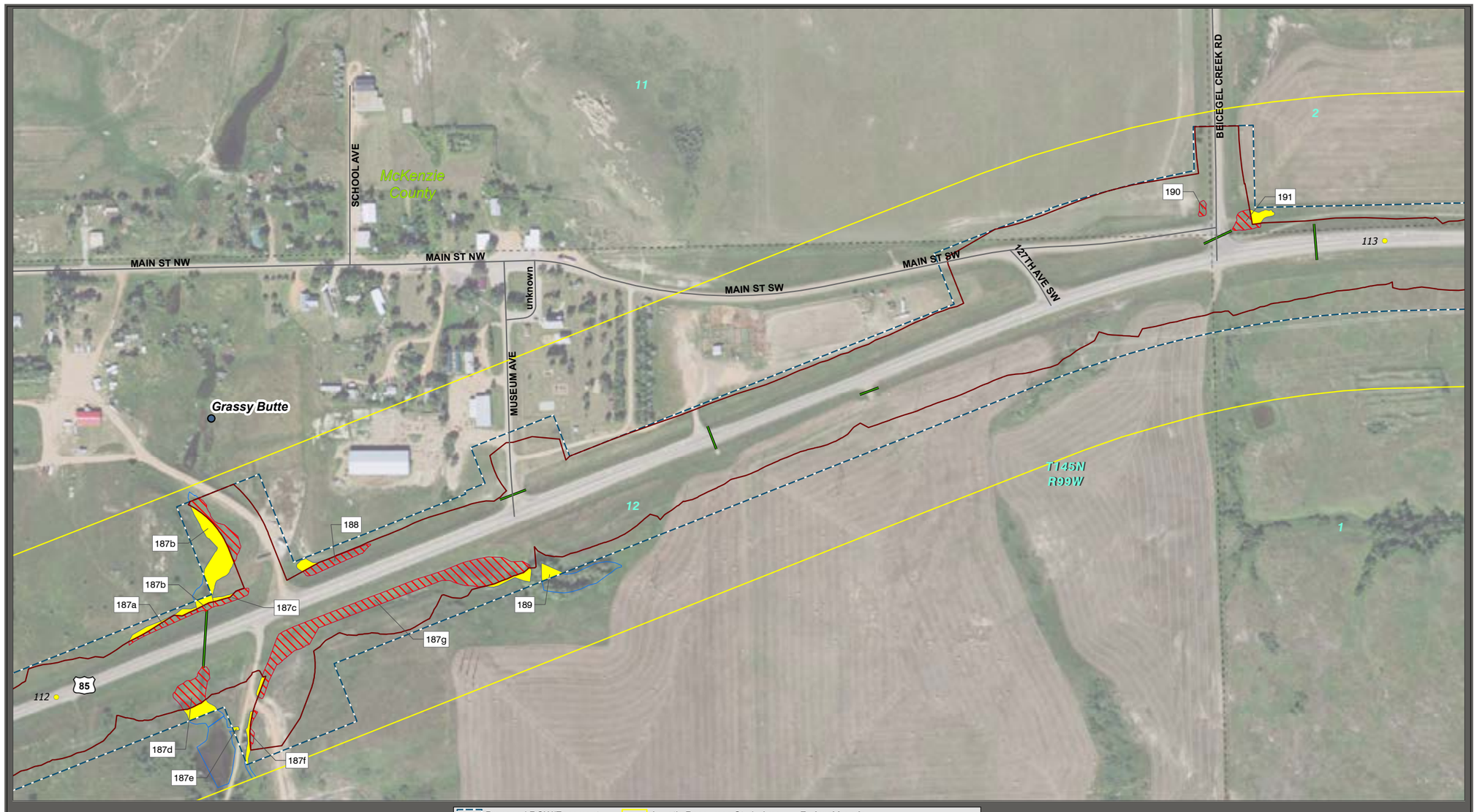
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

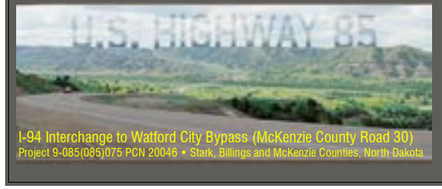
KLJ




T145N
R99W
24
19
18
T145N
R98W
85
181
111
McKenzie
County
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 42 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


EAST BEICEGEL CREEK RD
2ND ST SW
CHARLIE BOB CREEK RD
187b
187a
187
186
182
184
185
183a
183b
112
85
13
12
T145N
R99W
McKenzie
County
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 43 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn





0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

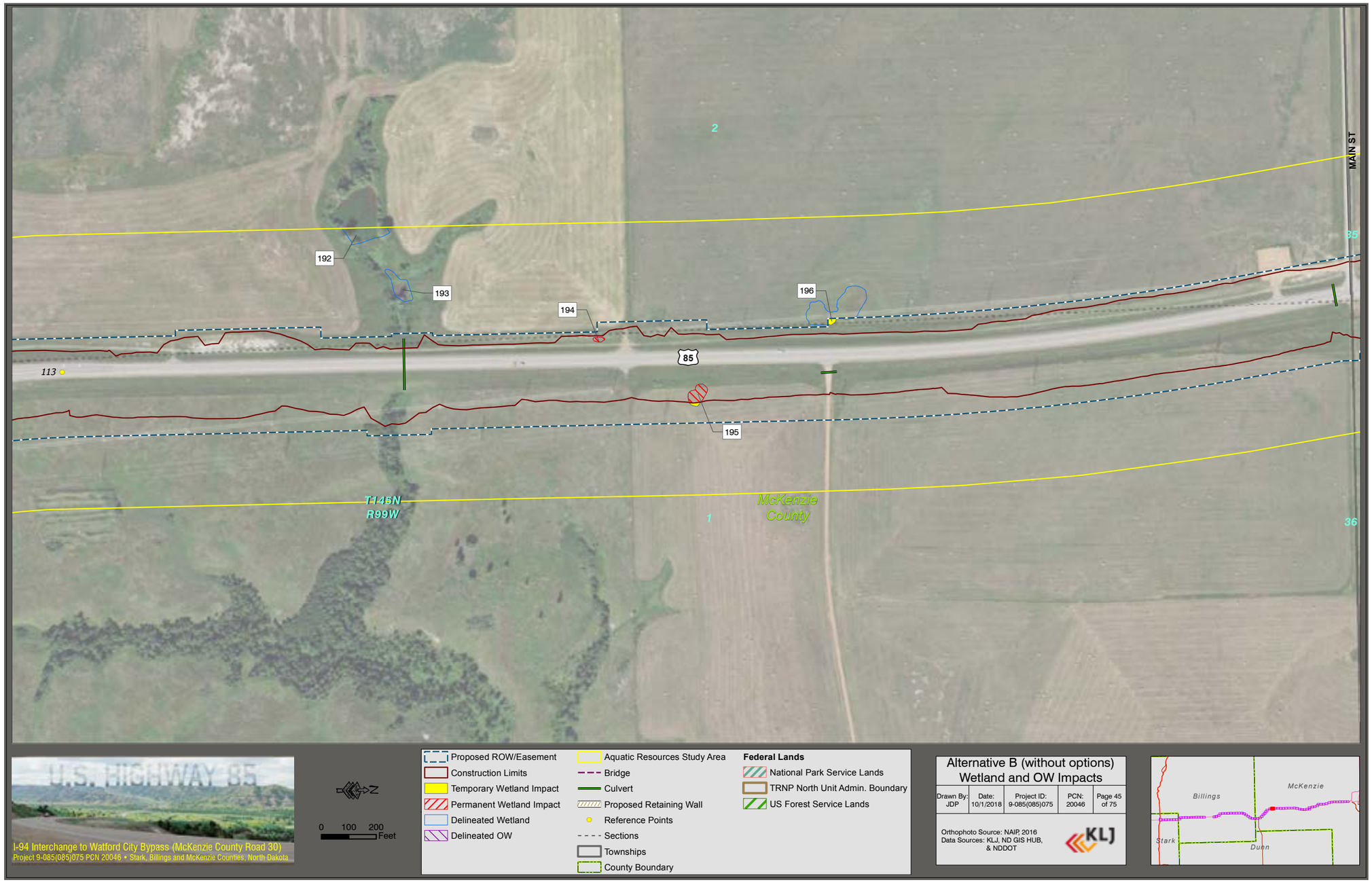
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 44 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

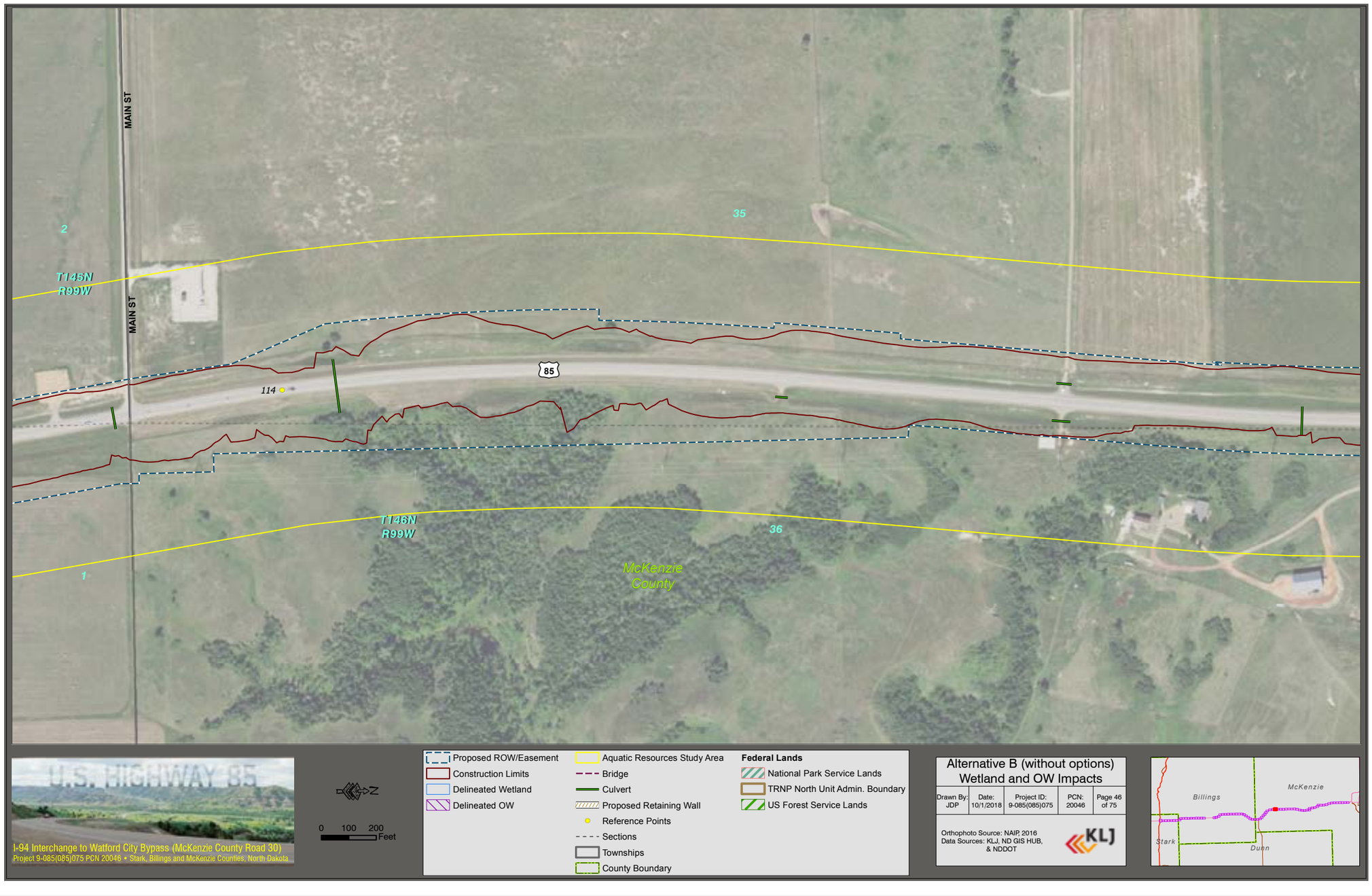
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative B (without options)
Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 45 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

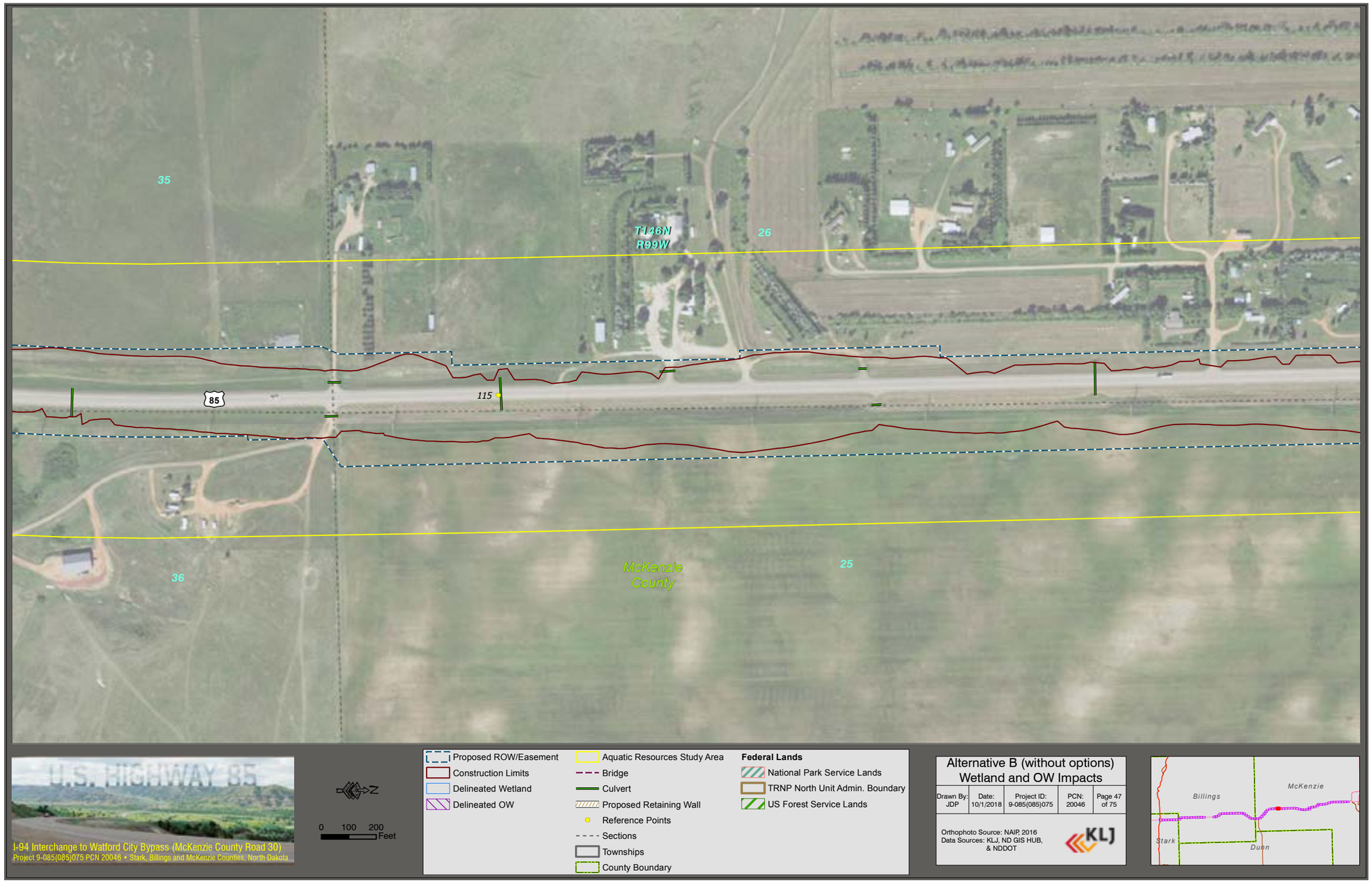
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 46 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

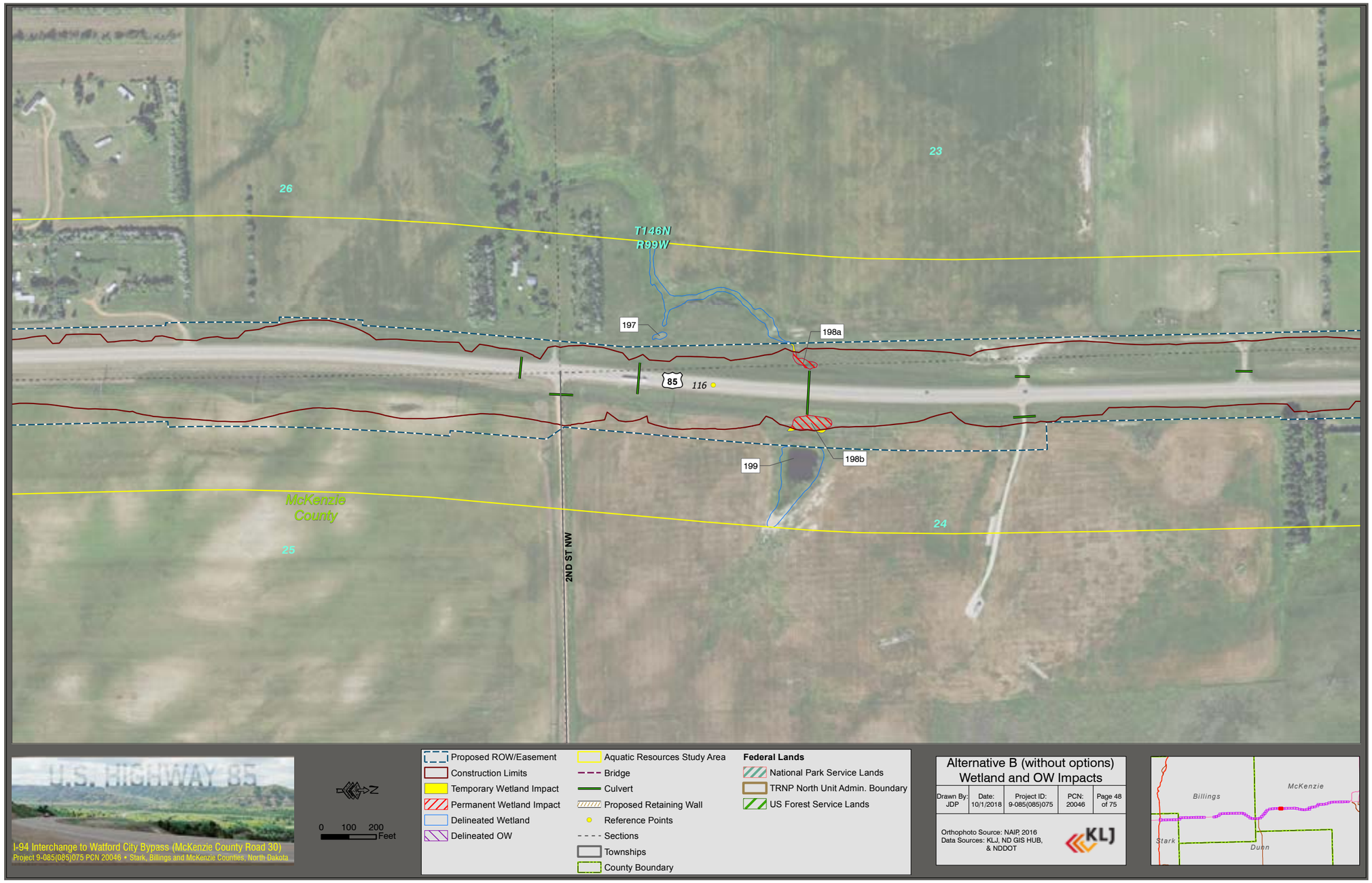
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

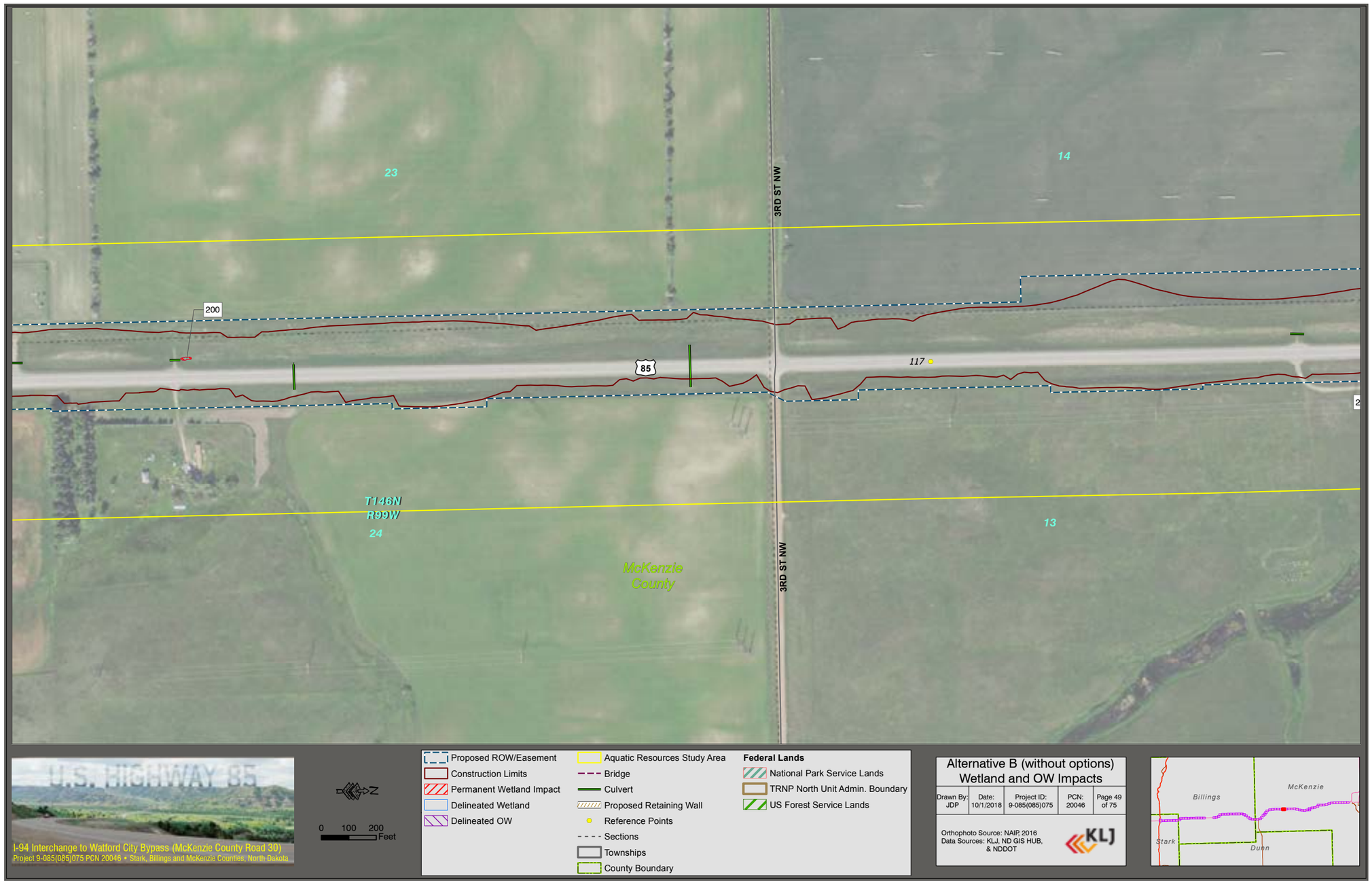
Alternative B (without options) Wetland and OW Impacts

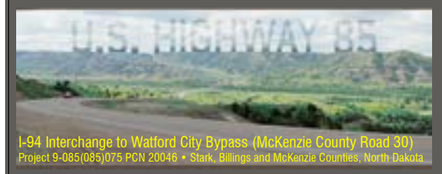
Drawn By:	Date:	Project ID:	PCN:	Page 47 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


26
23
T146N
R99W
197
198a
85
116
199
198b
McKenzie
County
25
24
2ND ST NW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 48 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


23
14
3RD ST NW
200
85
117
T146N
R99W
24
13
McKenzie
County
3RD ST NW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 49 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

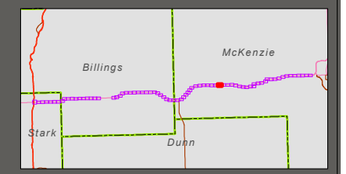
Federal Lands

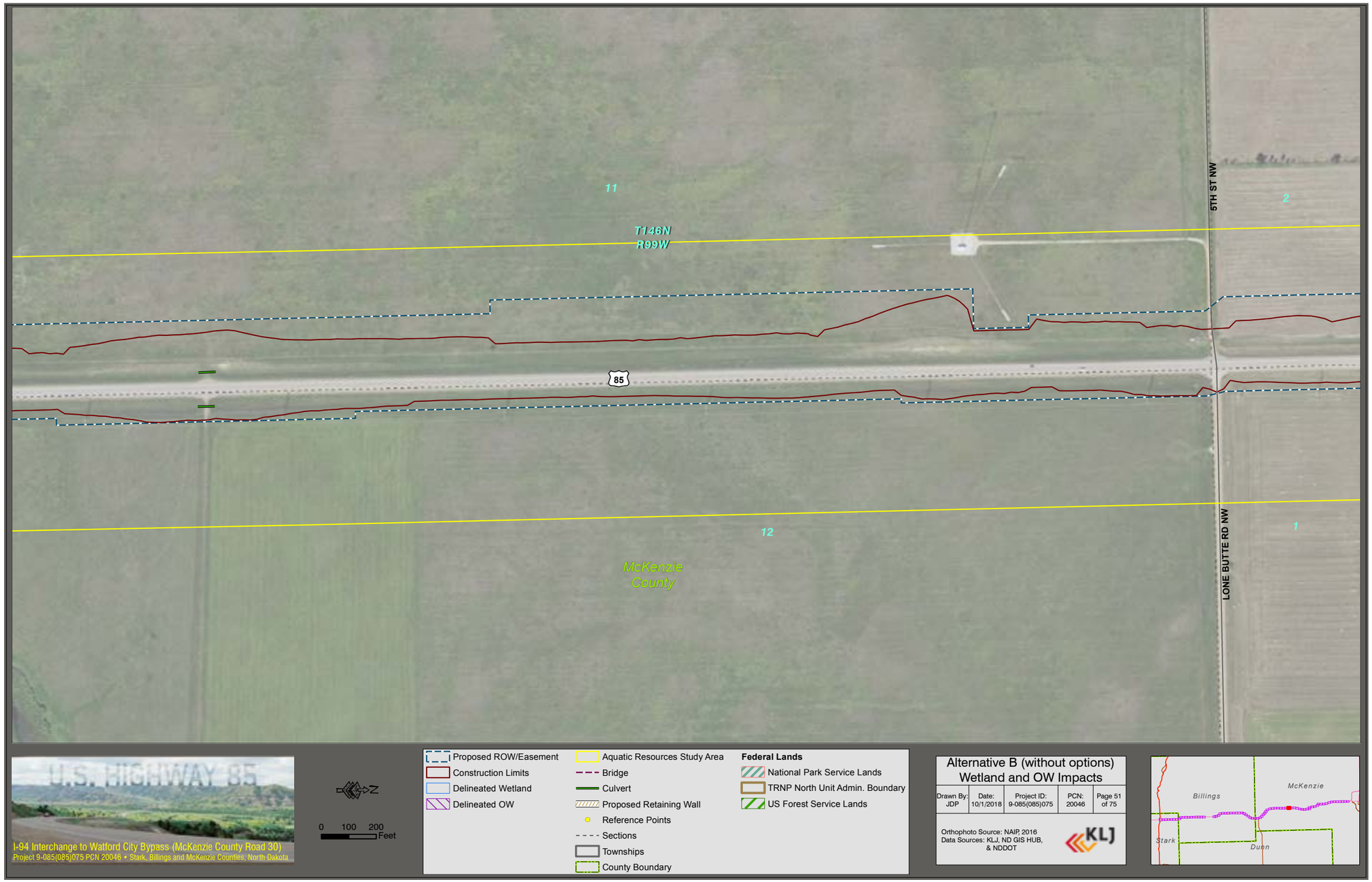
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 50 of 75
JDP	10/23/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

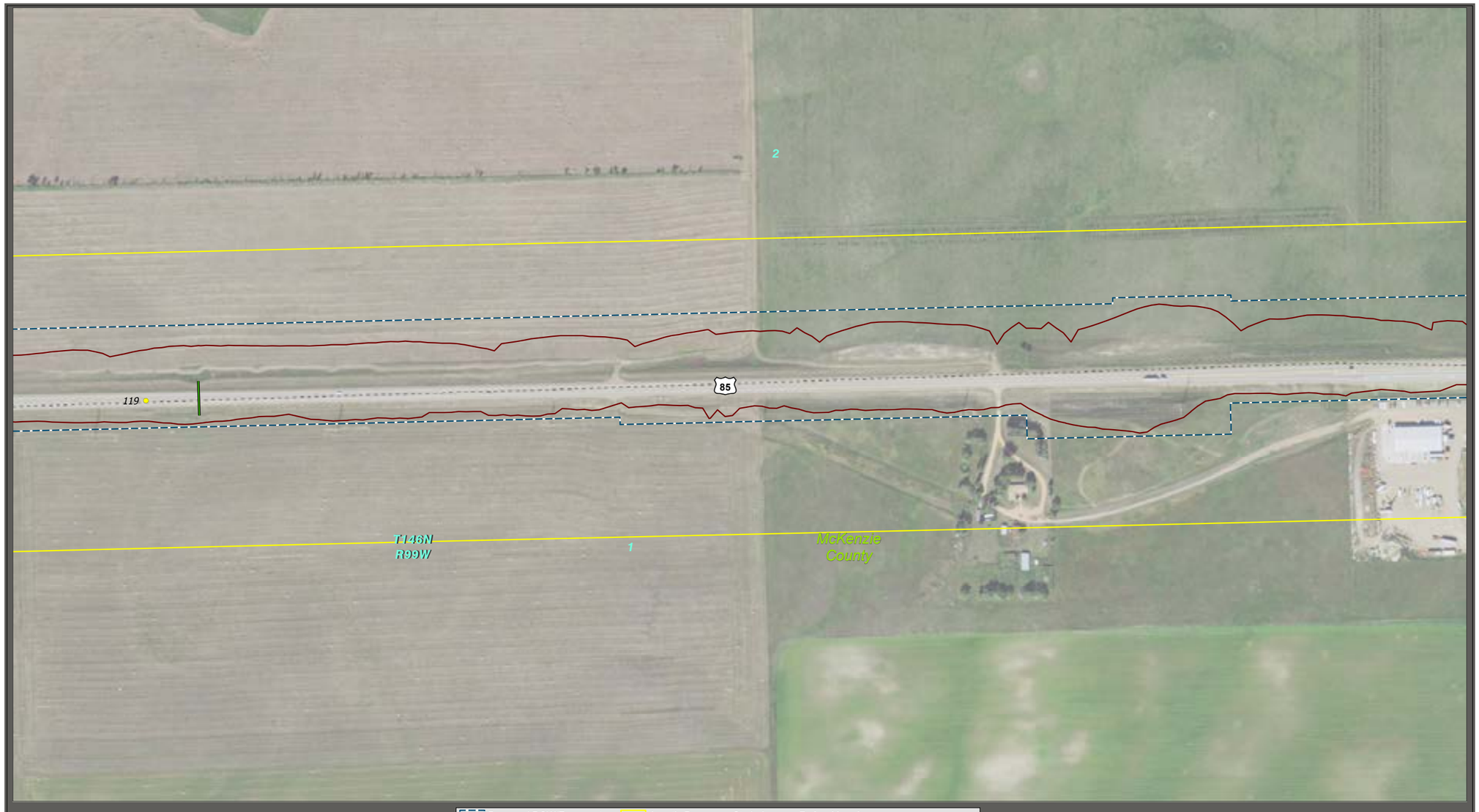
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

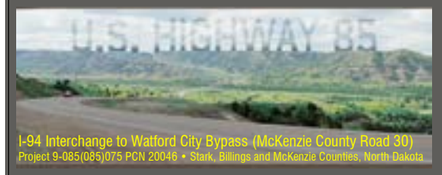
Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 51 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

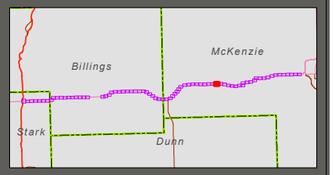
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

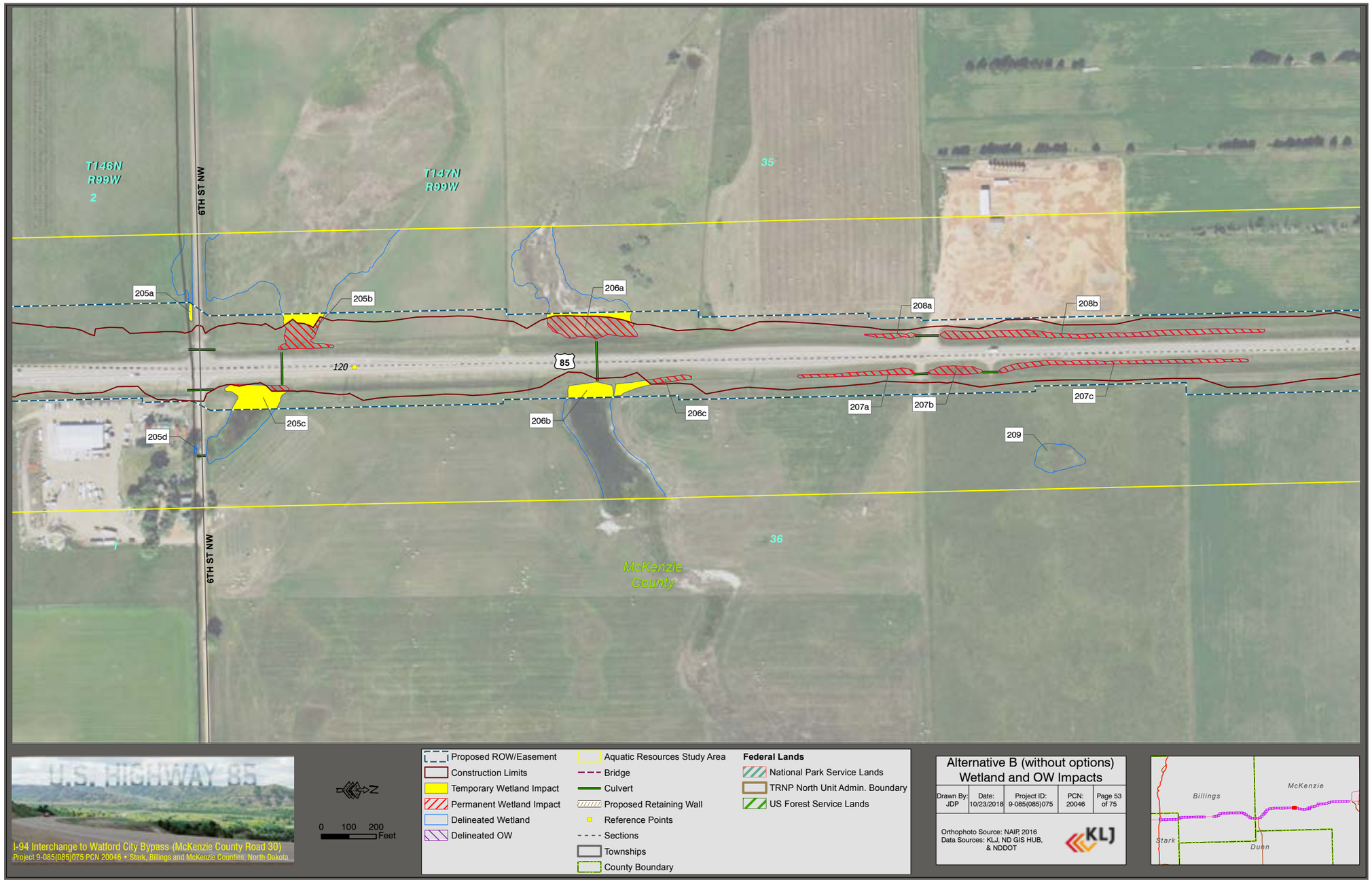
Alternative B (without options) Wetland and OW Impacts

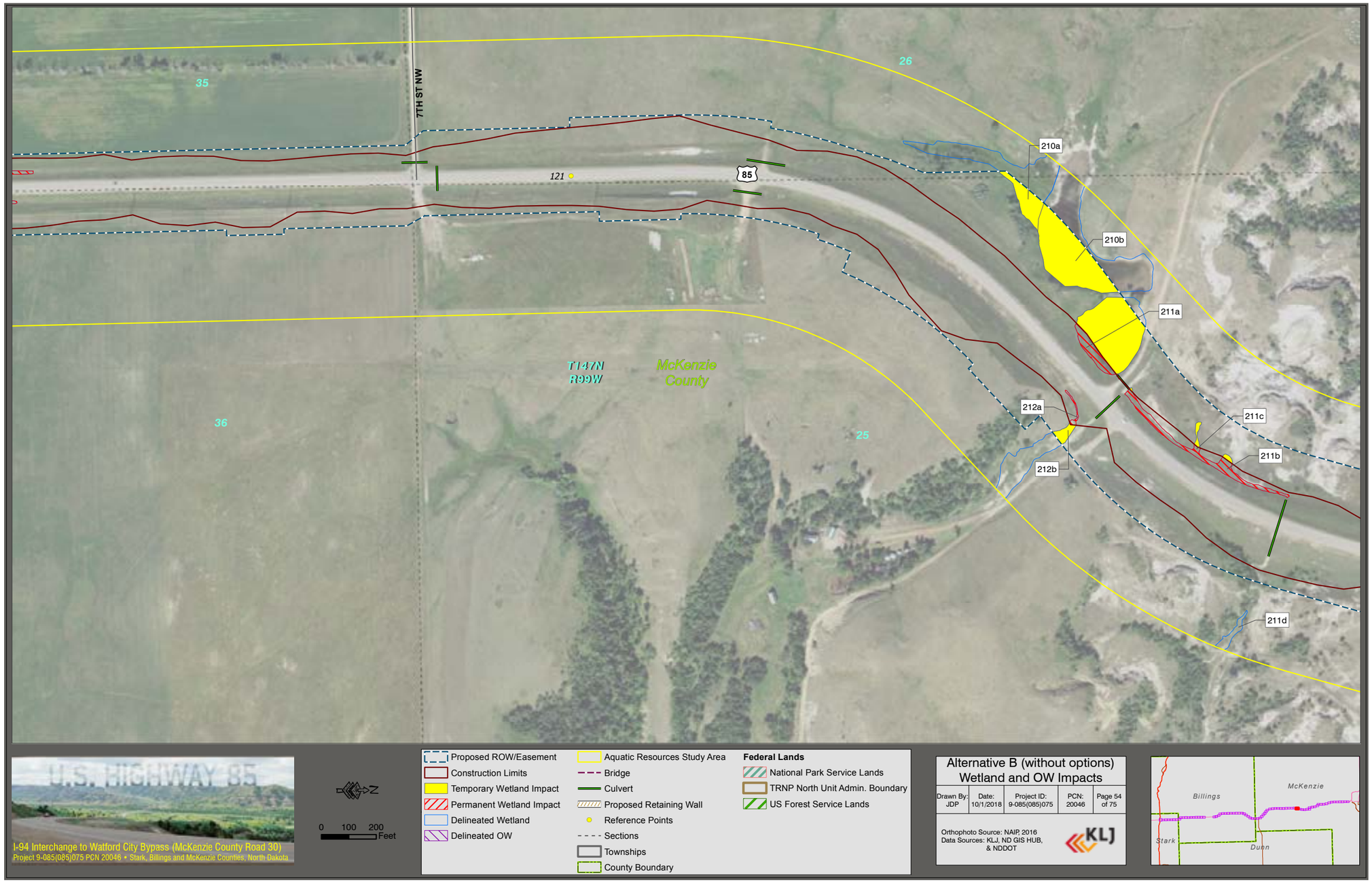
Drawn By:	Date:	Project ID:	PCN:	Page 52 of 75
JDP	10/1/2018	9-085(085)075	20046	

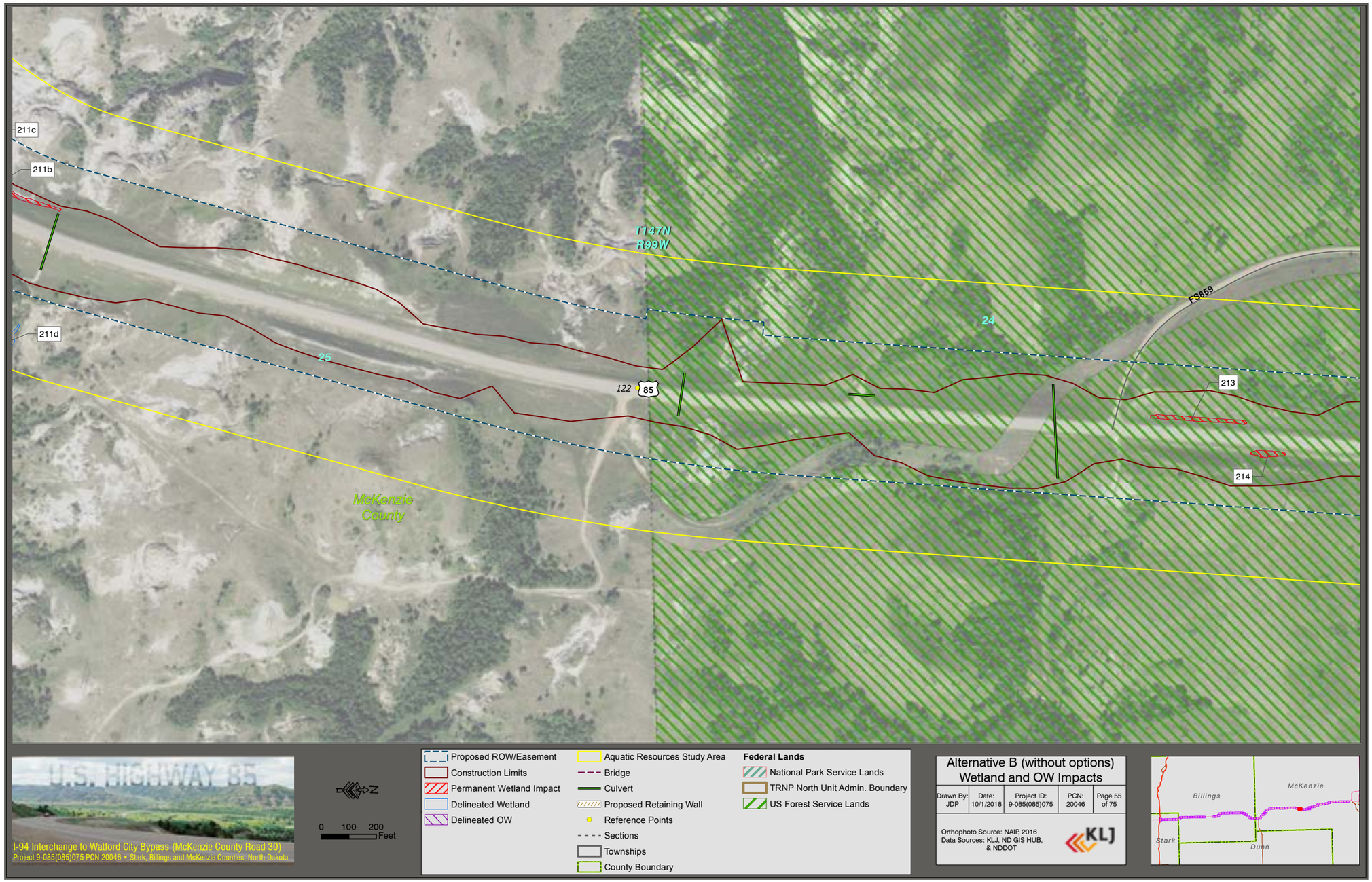
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

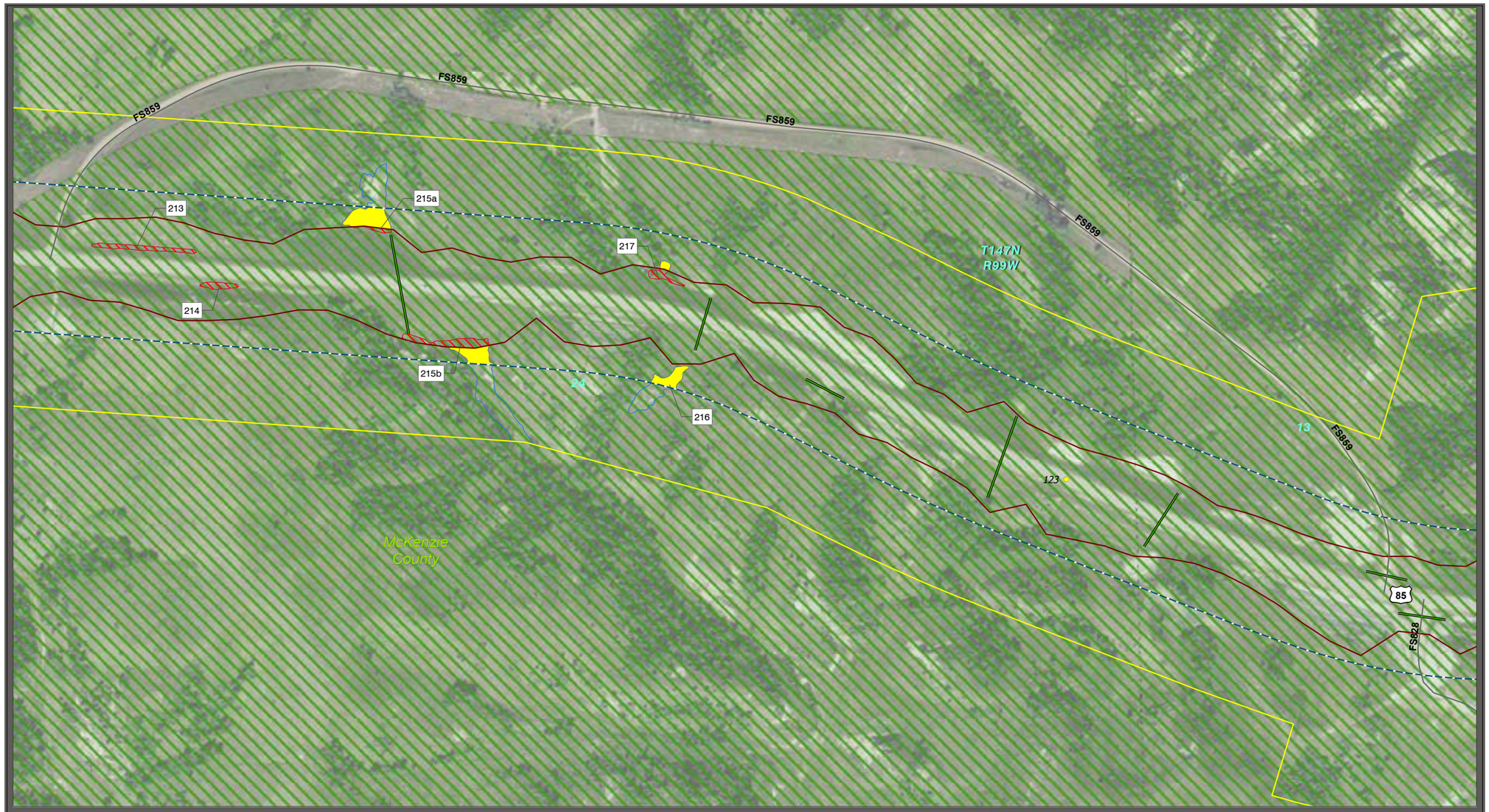
KLJ

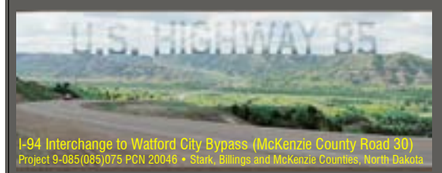



T146N
R99W
2
6TH ST NW
T147N
R99W
35
205a
205b
206a
208a
208b
120
85
205c
206b
206c
207a
207b
207c
205d
209
1
6TH ST NW
36
McKenzie
County
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/23/2018
Project ID: 9-085(085)075
PCN: 20046
Page 53 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


35
7TH ST NW
26
121
85
210a
210b
211a
T147N
R99W
McKenzie
County
212a
211c
211b
212b
36
25
211d
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 54 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


211c
211b
211d
T147N
R99W
24
25
122
85
213
214
FS859
McKenzie
County
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 55 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn





I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota

N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

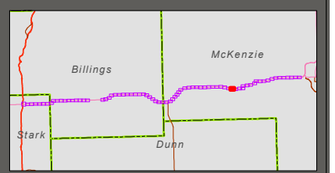
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

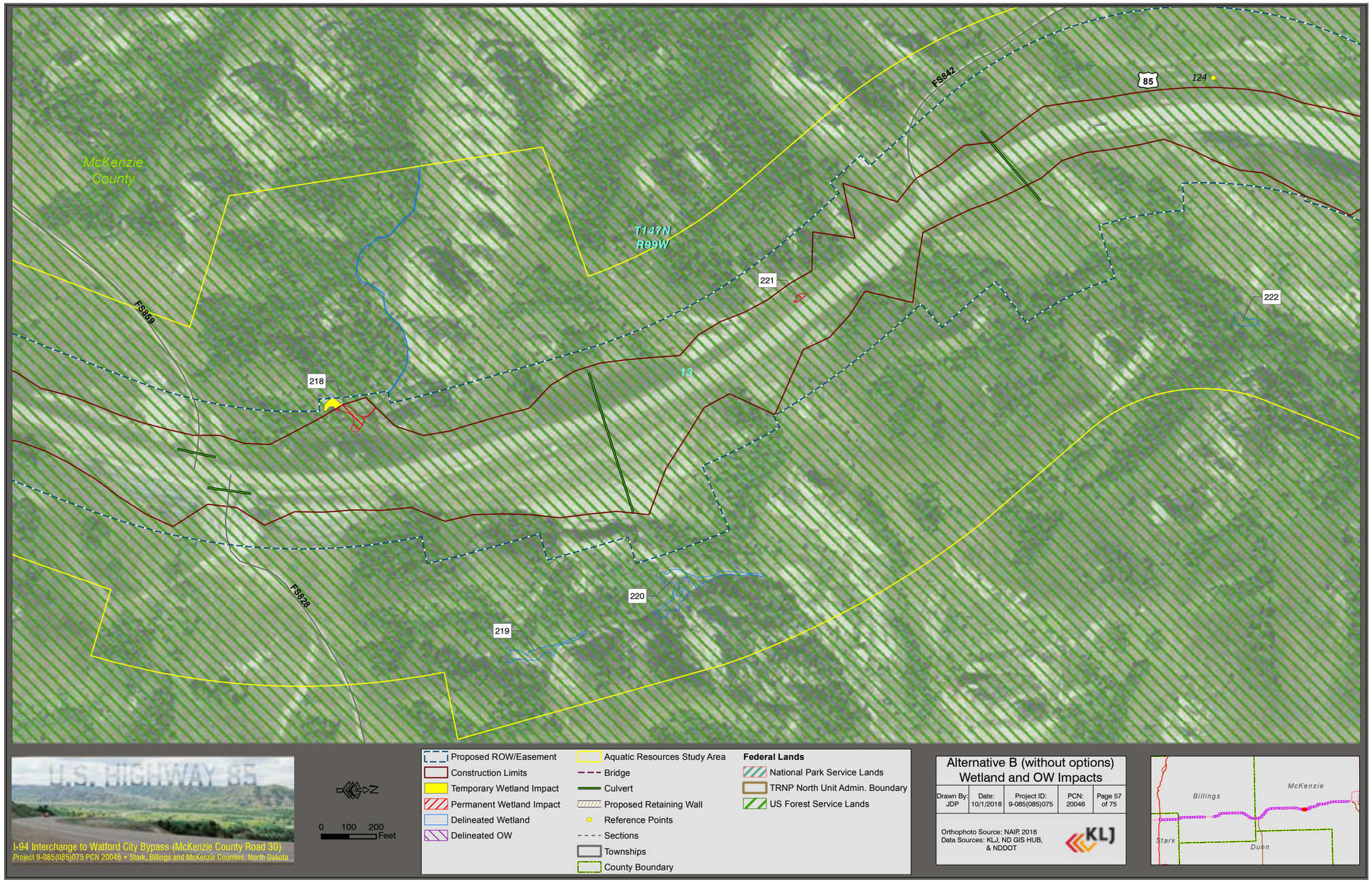
Alternative B (without options) Wetland and OW Impacts

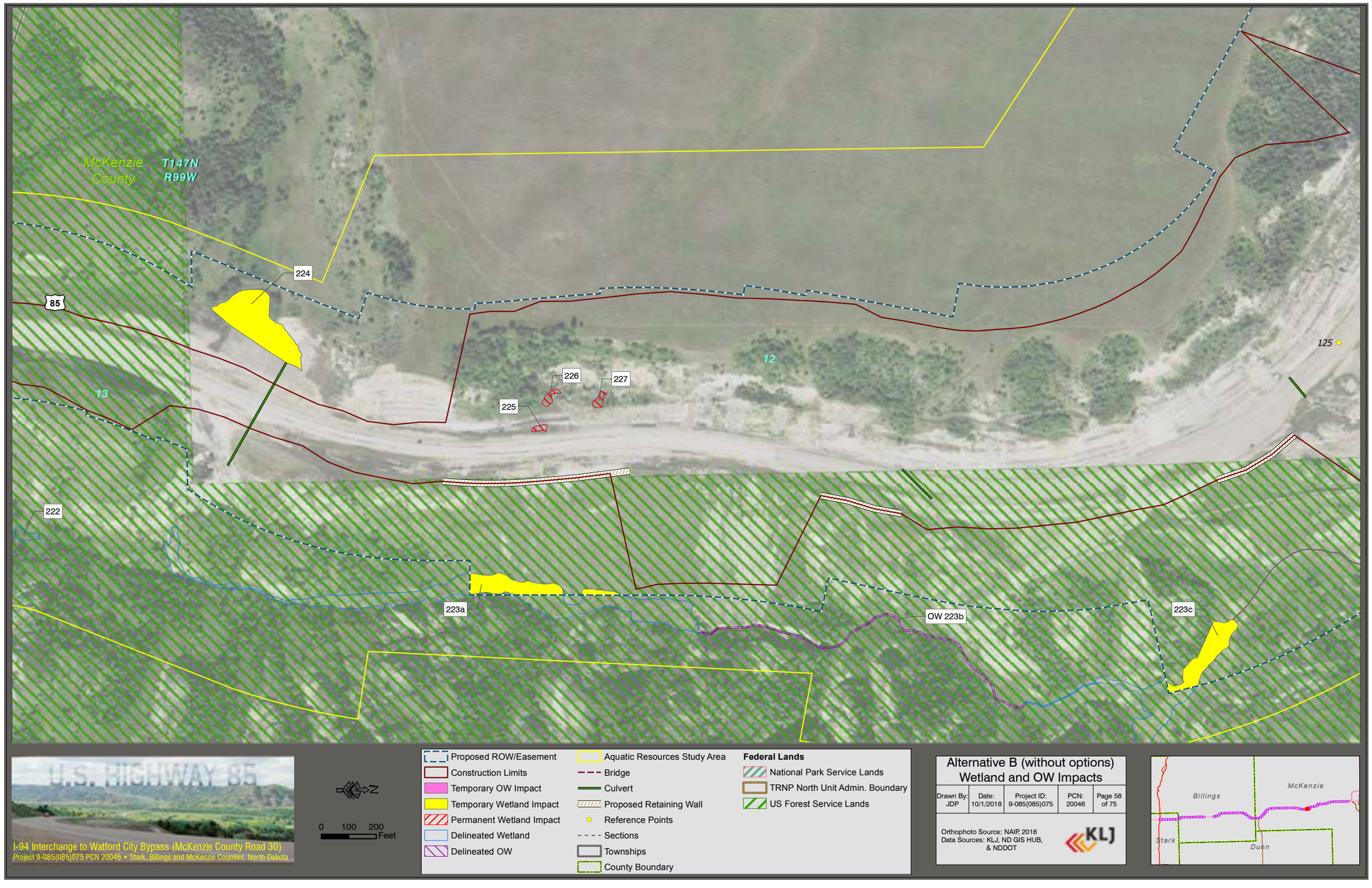
Drawn By:	Date:	Project ID:	PCN:	Page 56 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ




McKenzie
County
T147N
R99W
FS842
85
124
FS869
221
222
218
13
220
219
FS828
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 57 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary OW Impact
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

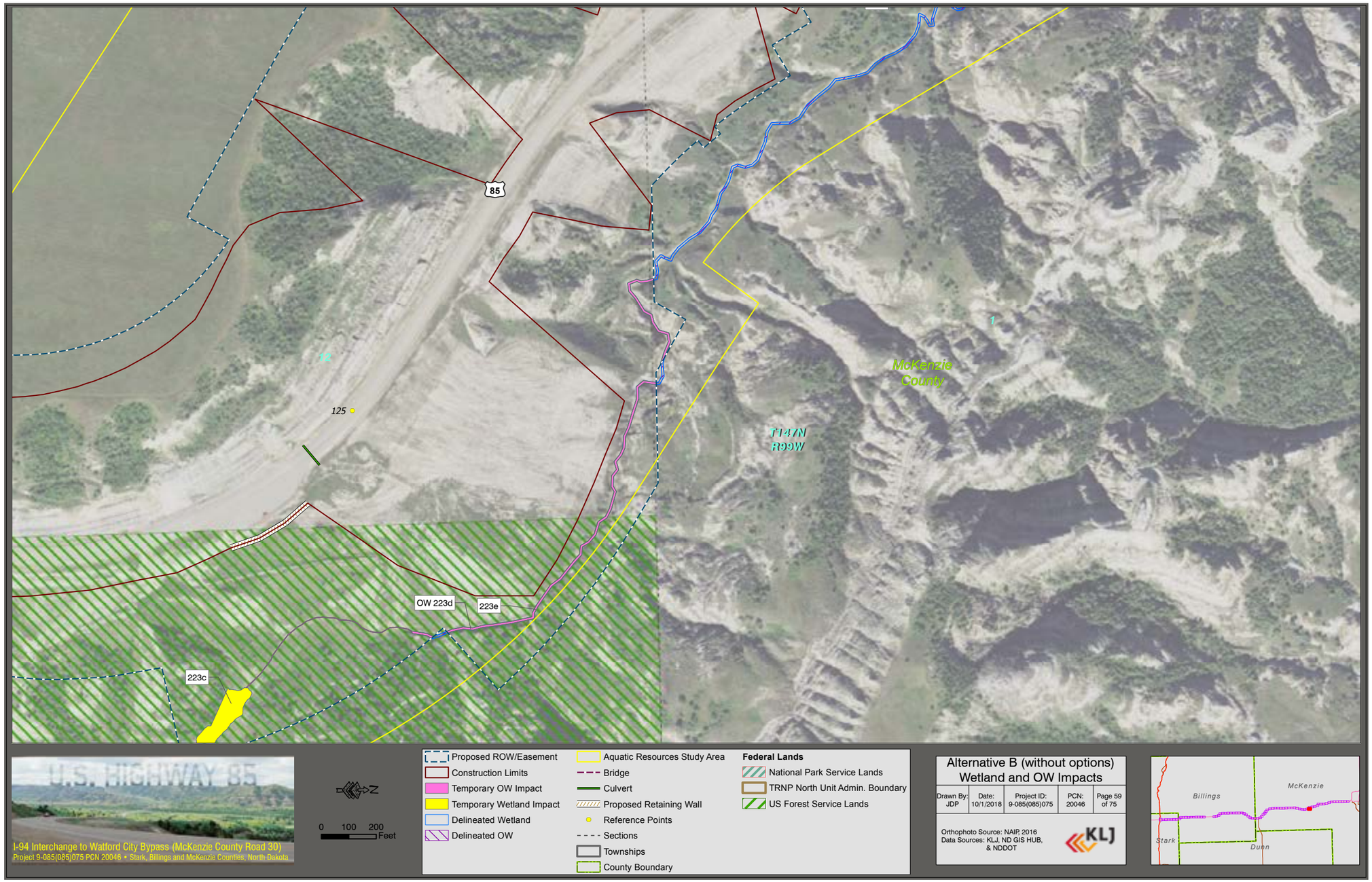
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

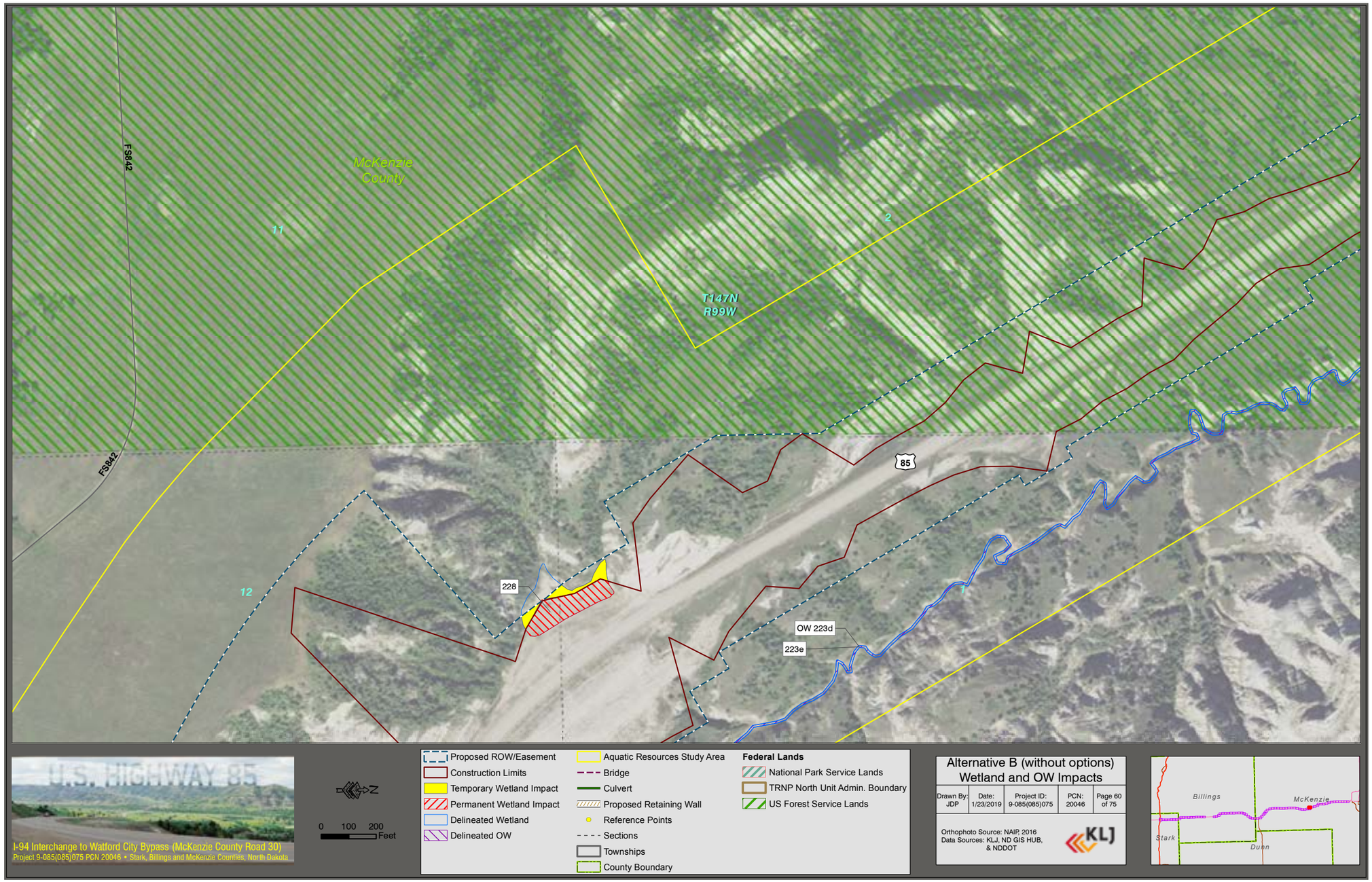
Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 58 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


85
1x
125
McKenzie
County
1
T147N
R99W
OW 223d
223e
223c
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary OW Impact
Temporary Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 59 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

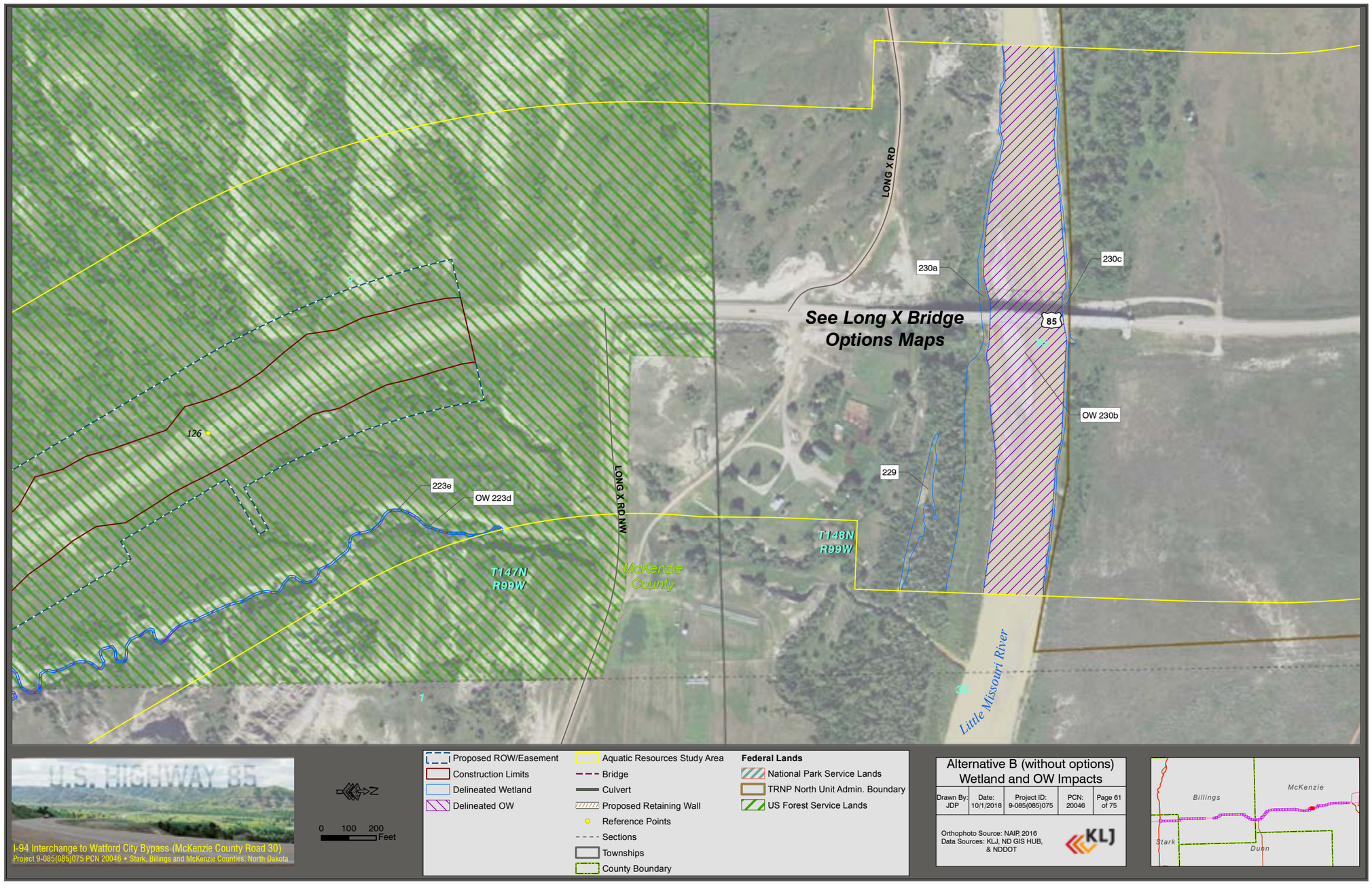
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

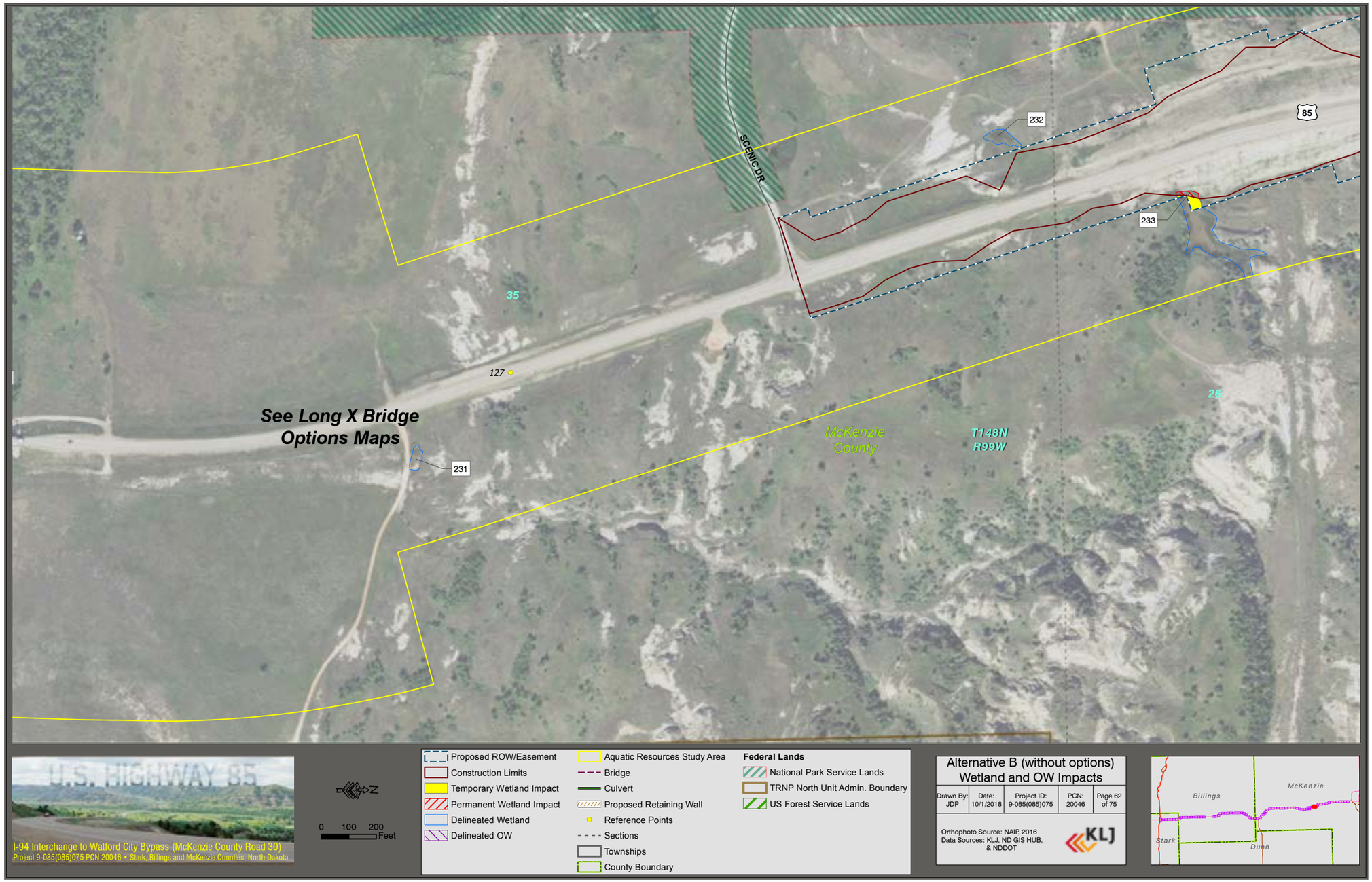
Alternative B (without options) Wetland and OW Impacts

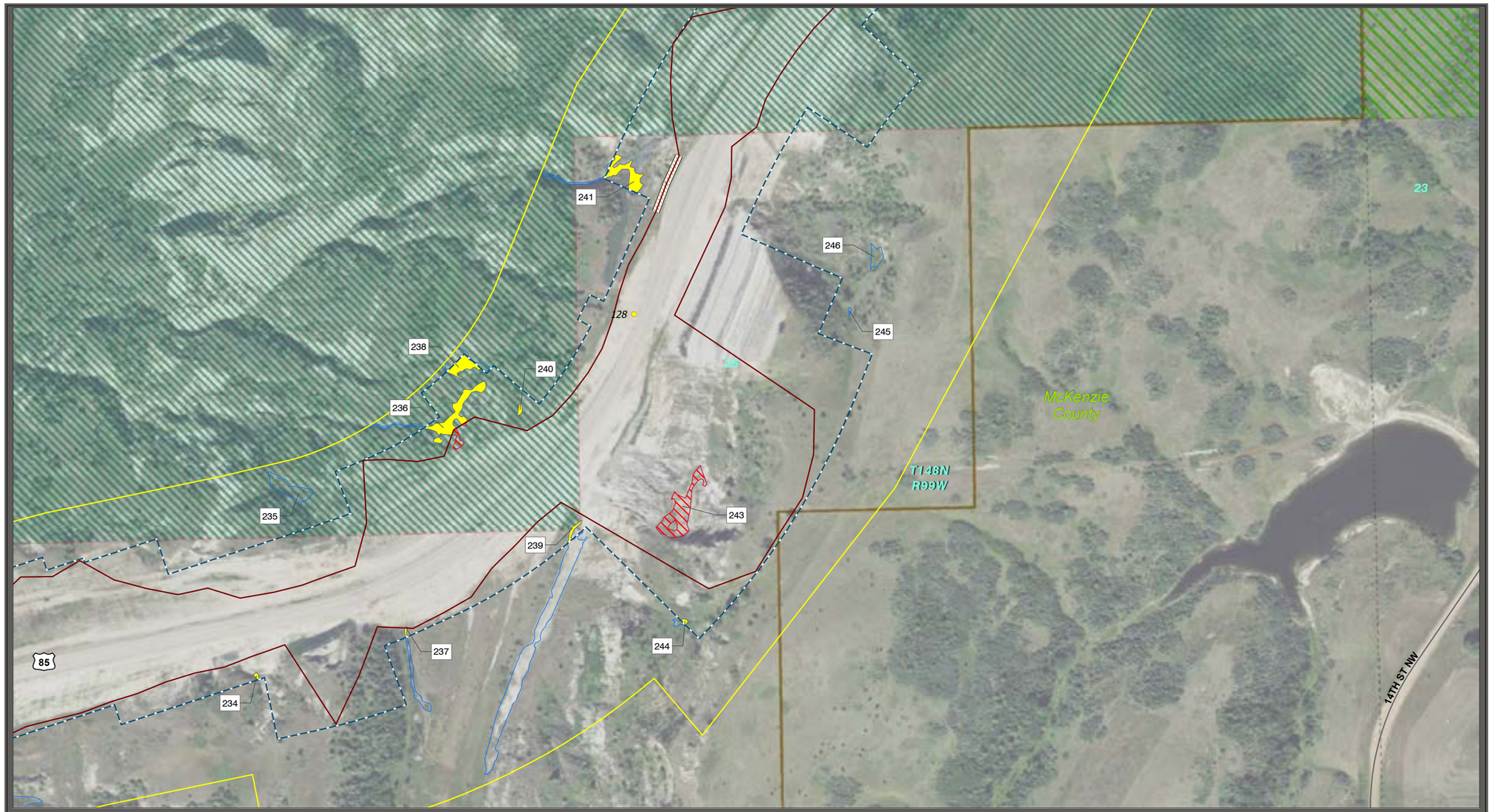
Drawn By:	Date:	Project ID:	PCN:	Page 60 of 75
JDP	1/23/2019	9-085(085)075	20046	

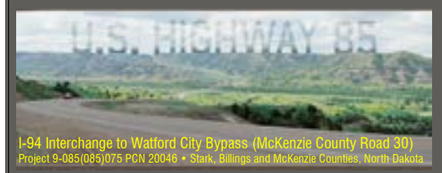
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


LONG X RD
See Long X Bridge Options Maps
230a
230c
85
OW 230b
229
126
223e
OW 223d
LONG X RD NW
T147N R99W
McKenzie County
T148N R99W
Little Missouri River
2
1
36
Proposed ROW/Easement
Construction Limits
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
0 100 200 Feet
N
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 61 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


SCENIC DR
85
232
233
35
127
See Long X Bridge Options Maps
231
McKenzie County
T148N
R99W
26
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200 Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 62 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn





0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

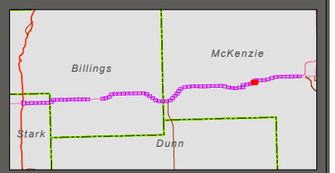
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

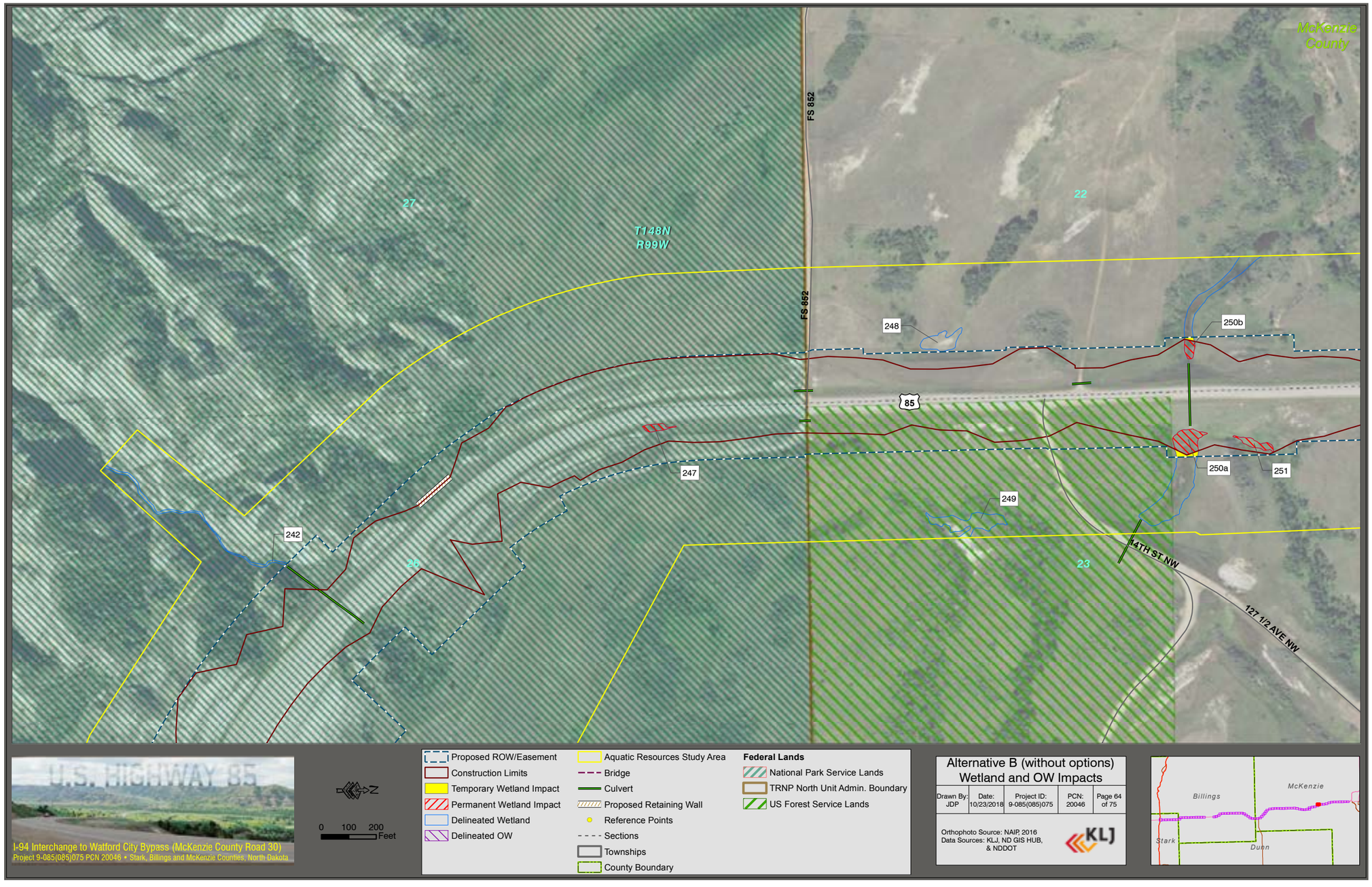
Alternative B (without options) Wetland and OW Impacts

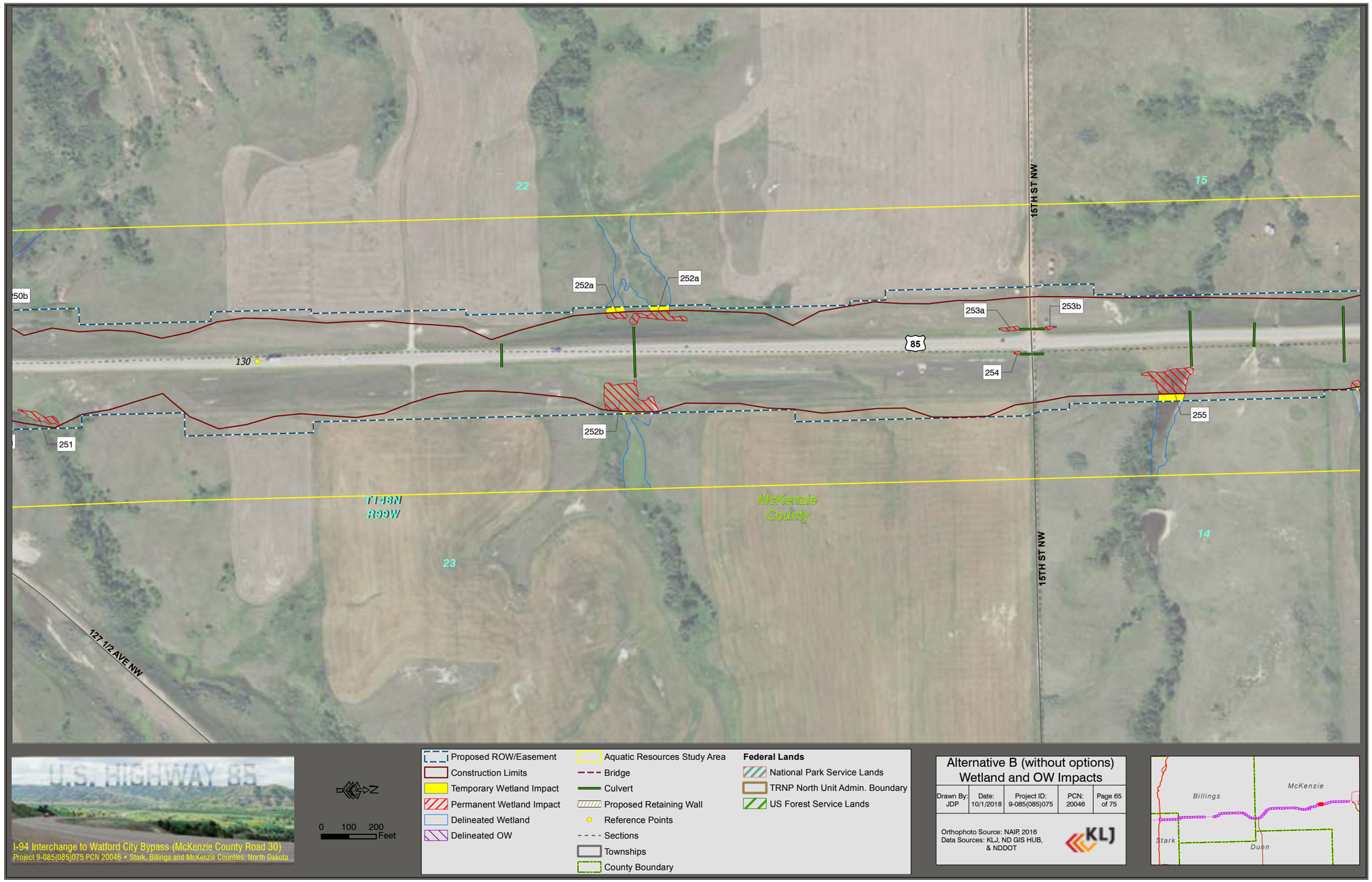
Drawn By:	Date:	Project ID:	PCN:	Page 63 of 75
JDP	10/1/2018	9-085(085)075	20046	

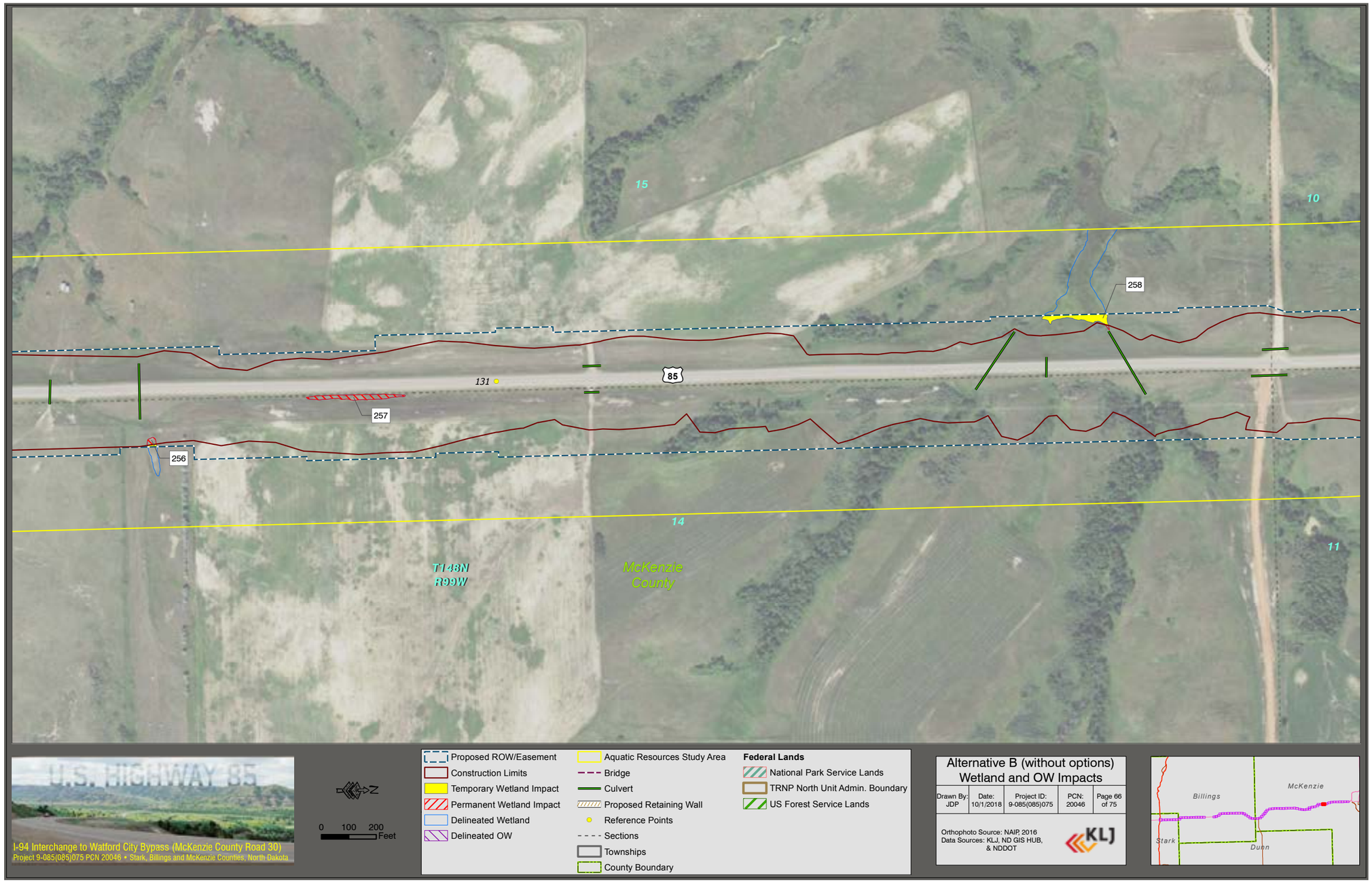
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

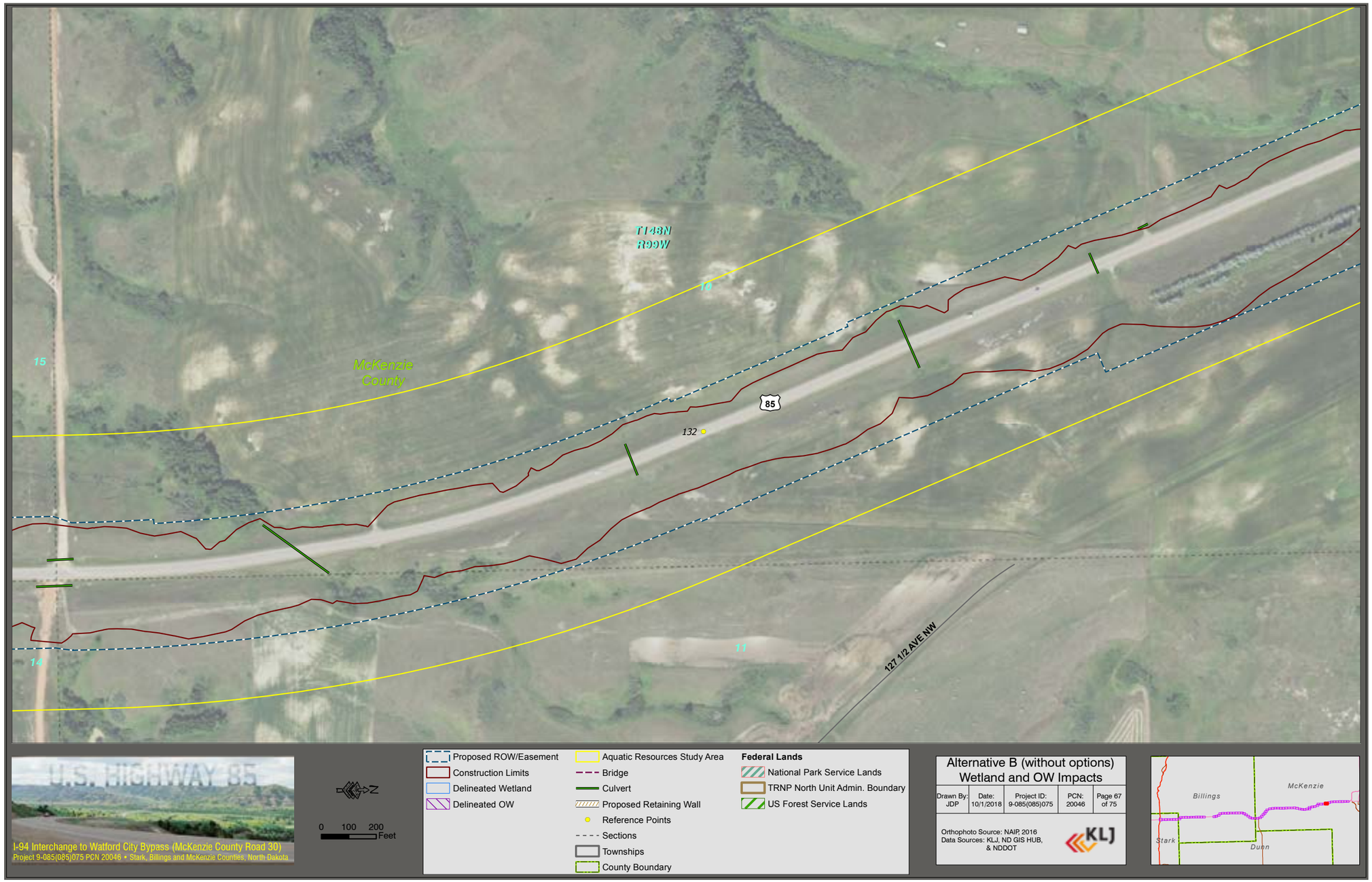
KLJ

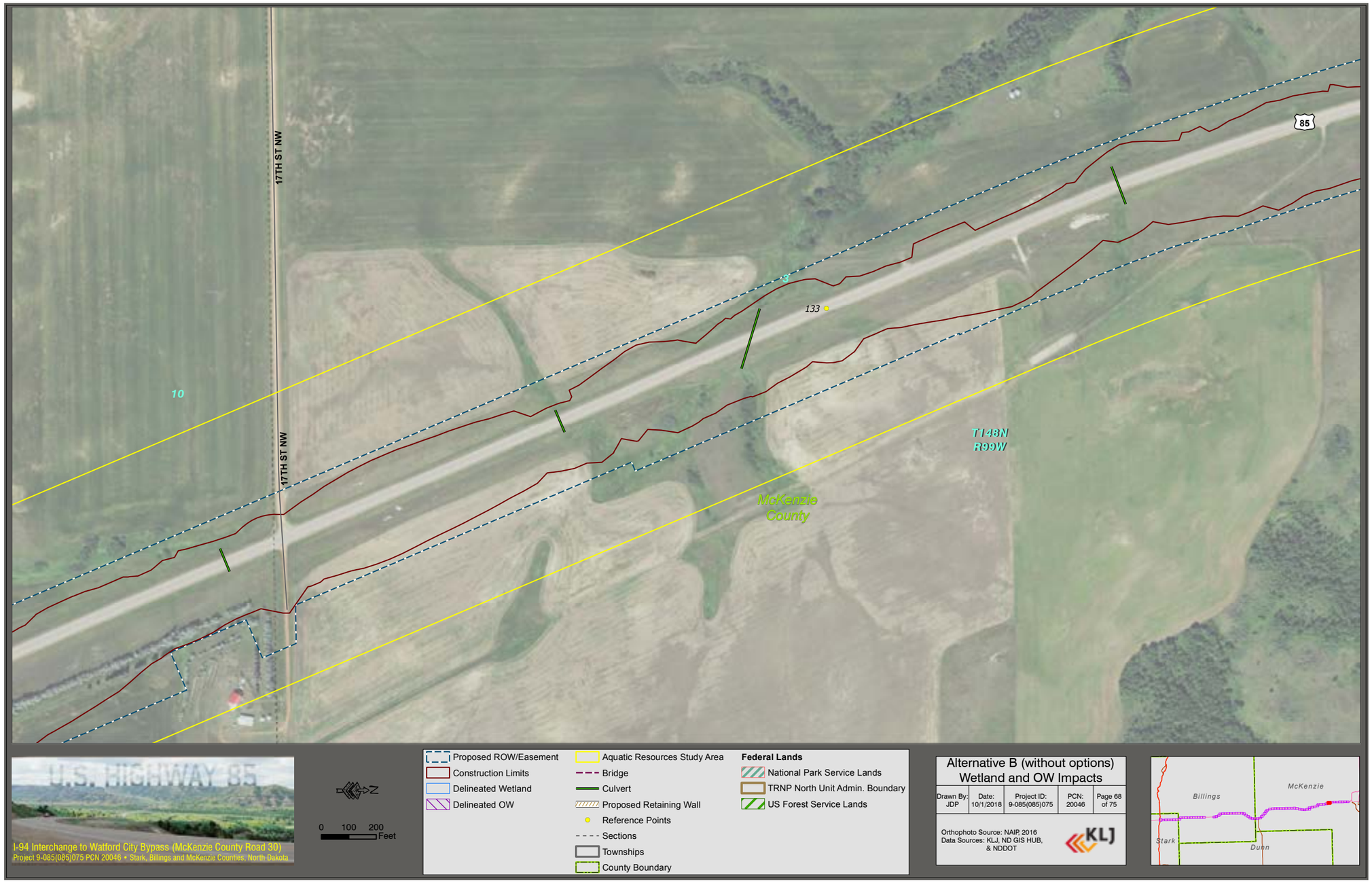



McKenzie County
27
T148N
R99W
22
FS 852
FS 862
248
250b
85
247
250a
251
249
242
25
23
14TH ST NW
127 1/2 AVE NW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200 Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/23/2018
Project ID: 9-085(085)075
PCN: 20046
Page 64 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


22
15
15TH ST NW
252a
252a
250b
253a
253b
85
130
254
255
252b
251
T148N
R99W
McKenzie
County
23
14
15TH ST NW
127 1/2 AVE NW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 65 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


15
10
258
131
85
257
256
14
11
T148N
R99W
McKenzie
County
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 66 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


T148N
R99W
15
16
14
11
McKenzie
County
85
132
127 1/2 AVE NW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 67 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

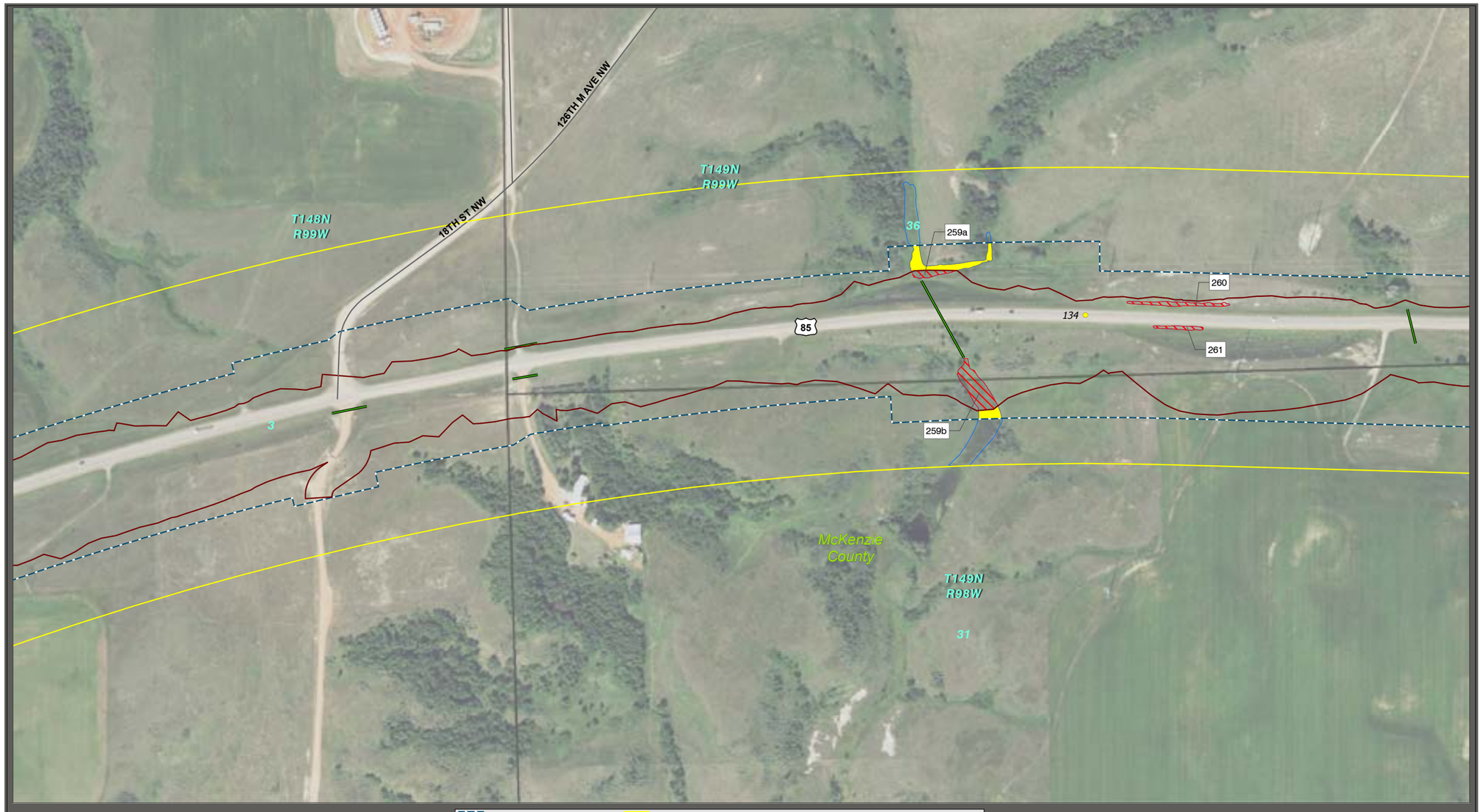
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

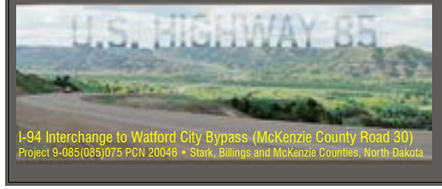
Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 68 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

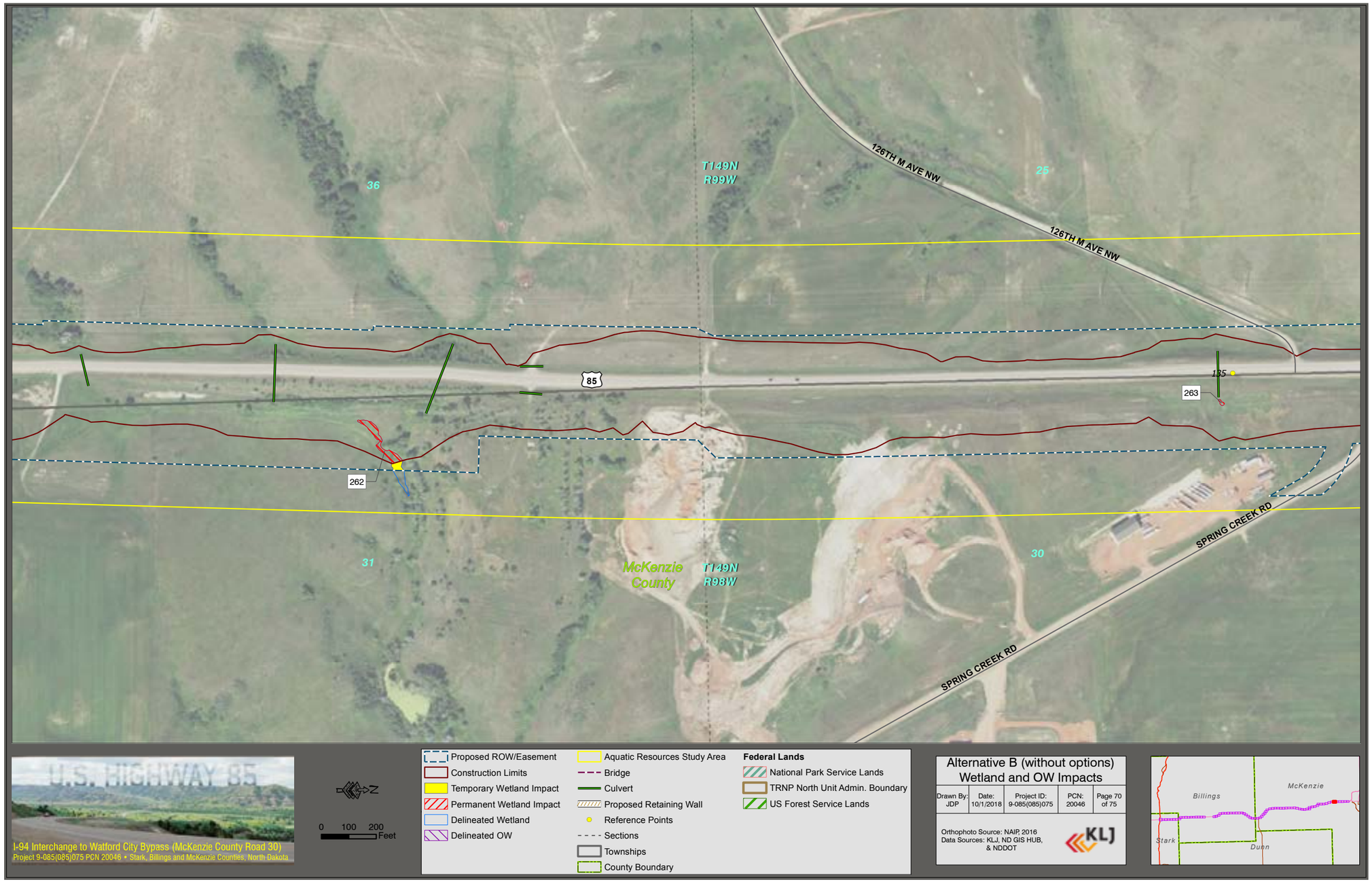
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

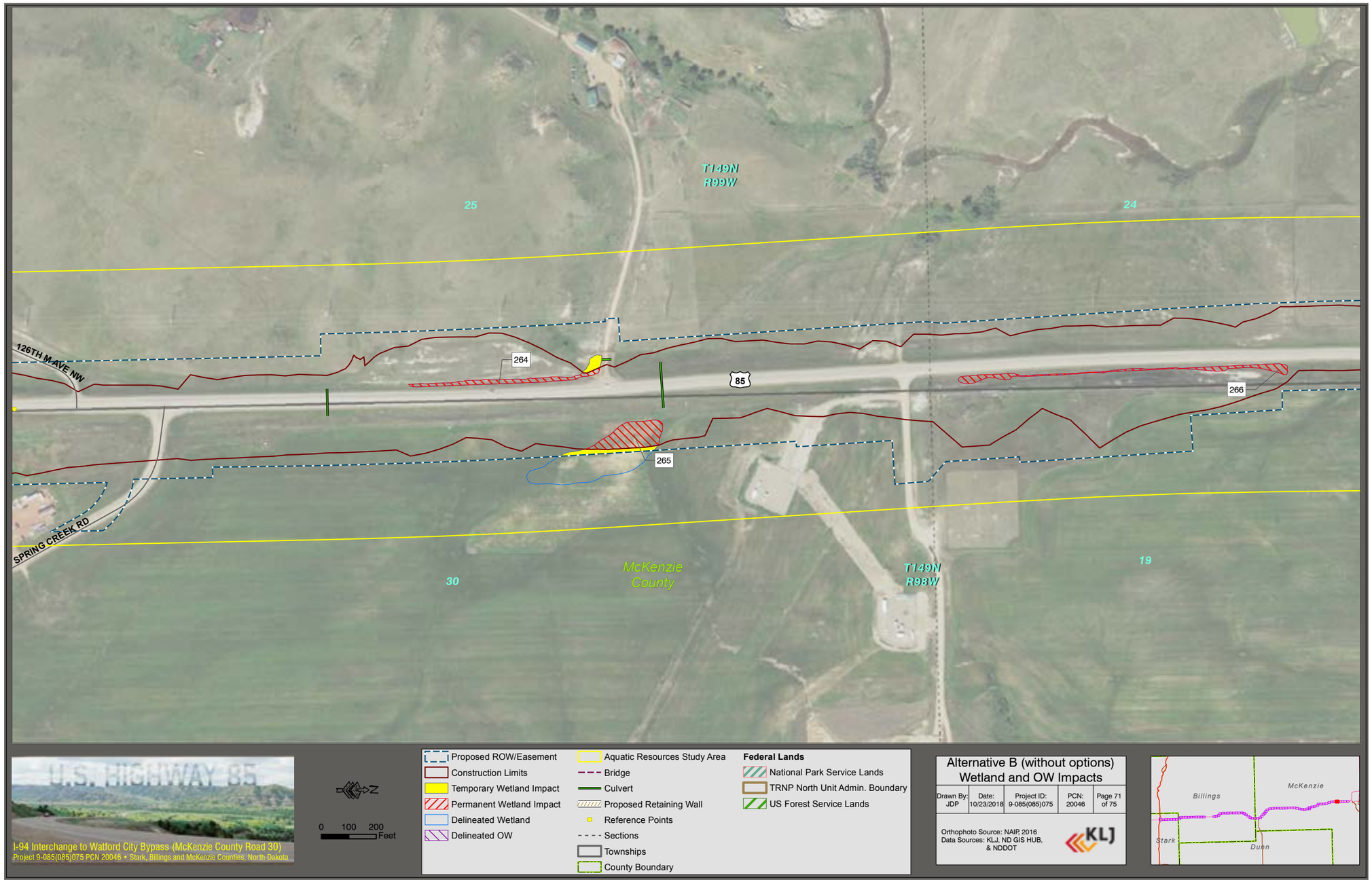
Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 69 of 75
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


36
T149N
R99W
25
126TH M AVE NW
126TH M AVE NW
85
135
263
262
31
McKenzie County
T149N
R98W
30
SPRING CREEK RD
SPRING CREEK RD
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative B (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/1/2018
Project ID: 9-085(085)075
PCN: 20046
Page 70 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

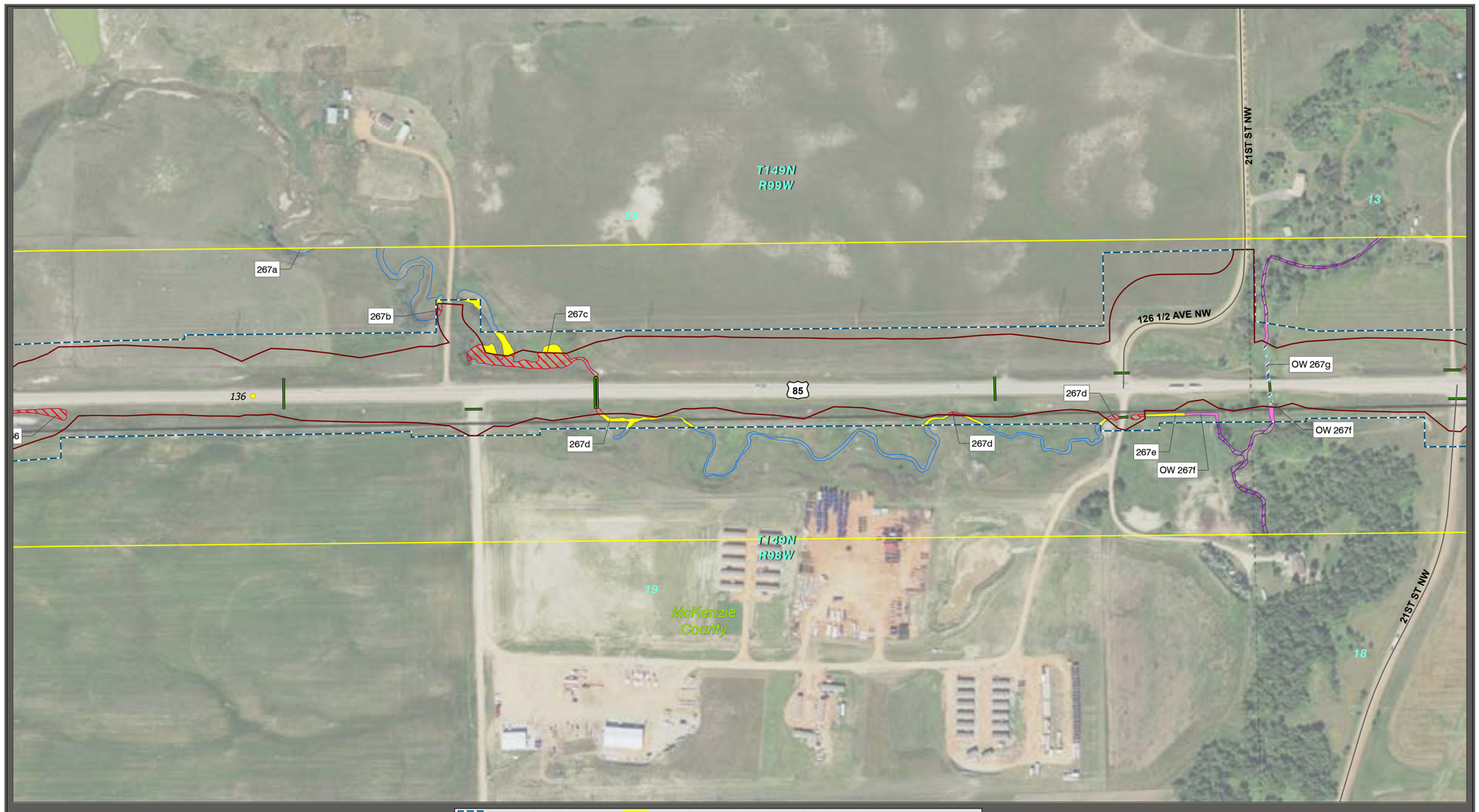
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

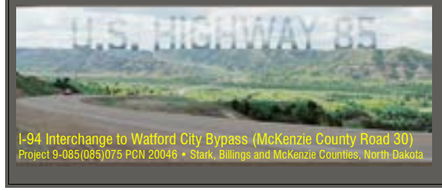
Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 71 of 75
JDP	10/23/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ





0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary OW Impact
- Temporary Wetland Impact
- Permanent OW Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

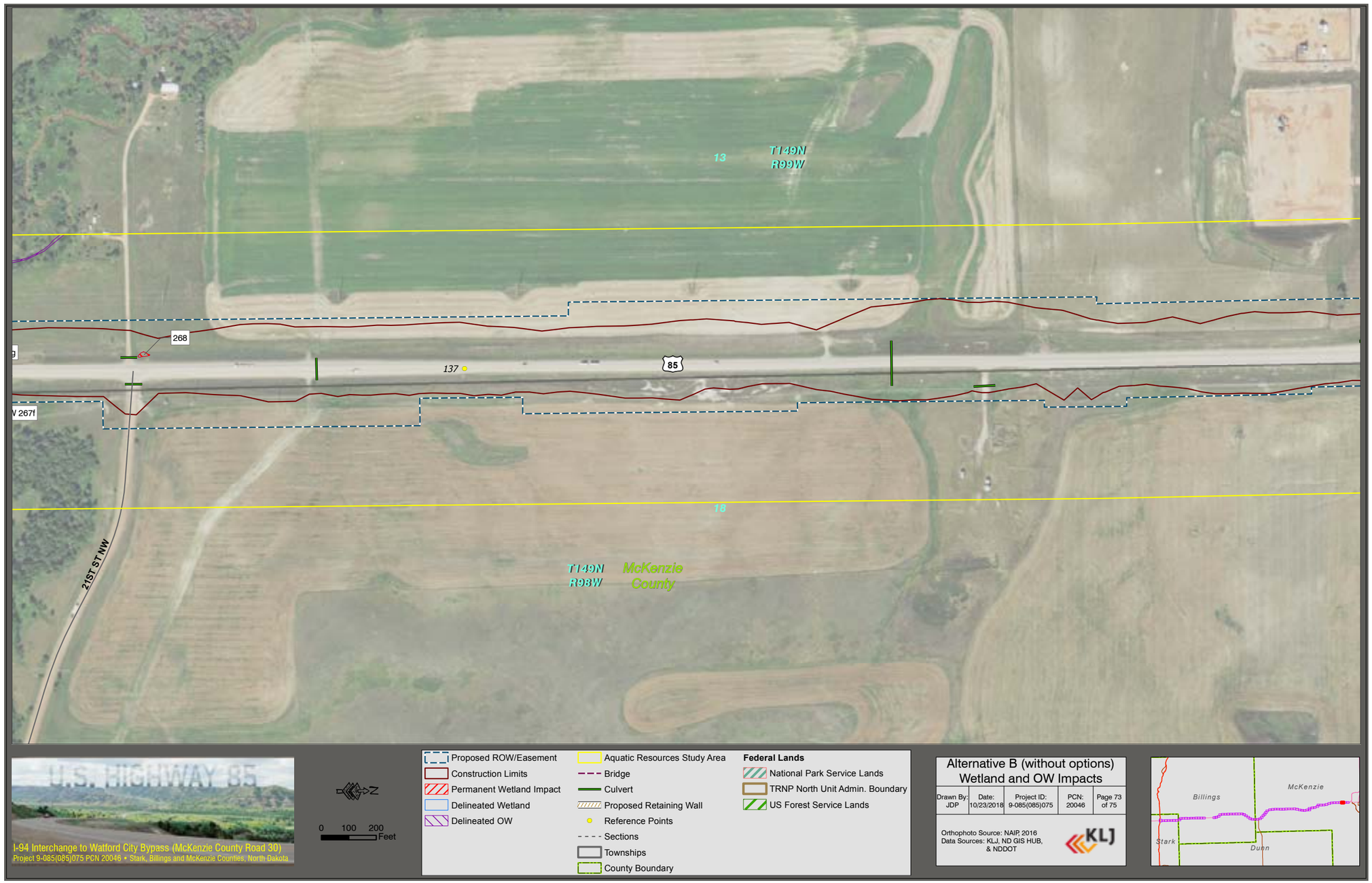
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 72 of 75
JDP	10/23/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



0 100 200 Feet

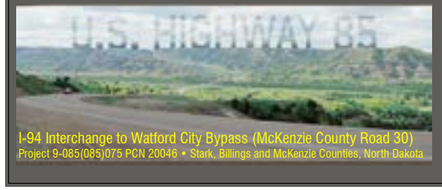
- Proposed ROW/Easement
- Construction Limits
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 73 of 75
JDP	10/23/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT



N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

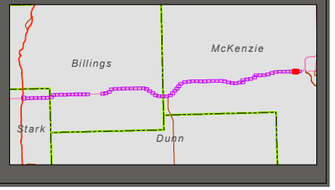
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

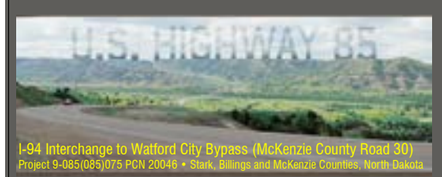
Alternative B (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	
JDP	10/23/2018	9-085(085)075	20046	Page 74 of 75

Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ





0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

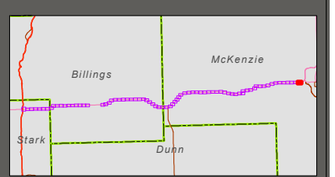
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative B (without options) Wetland and OW Impacts

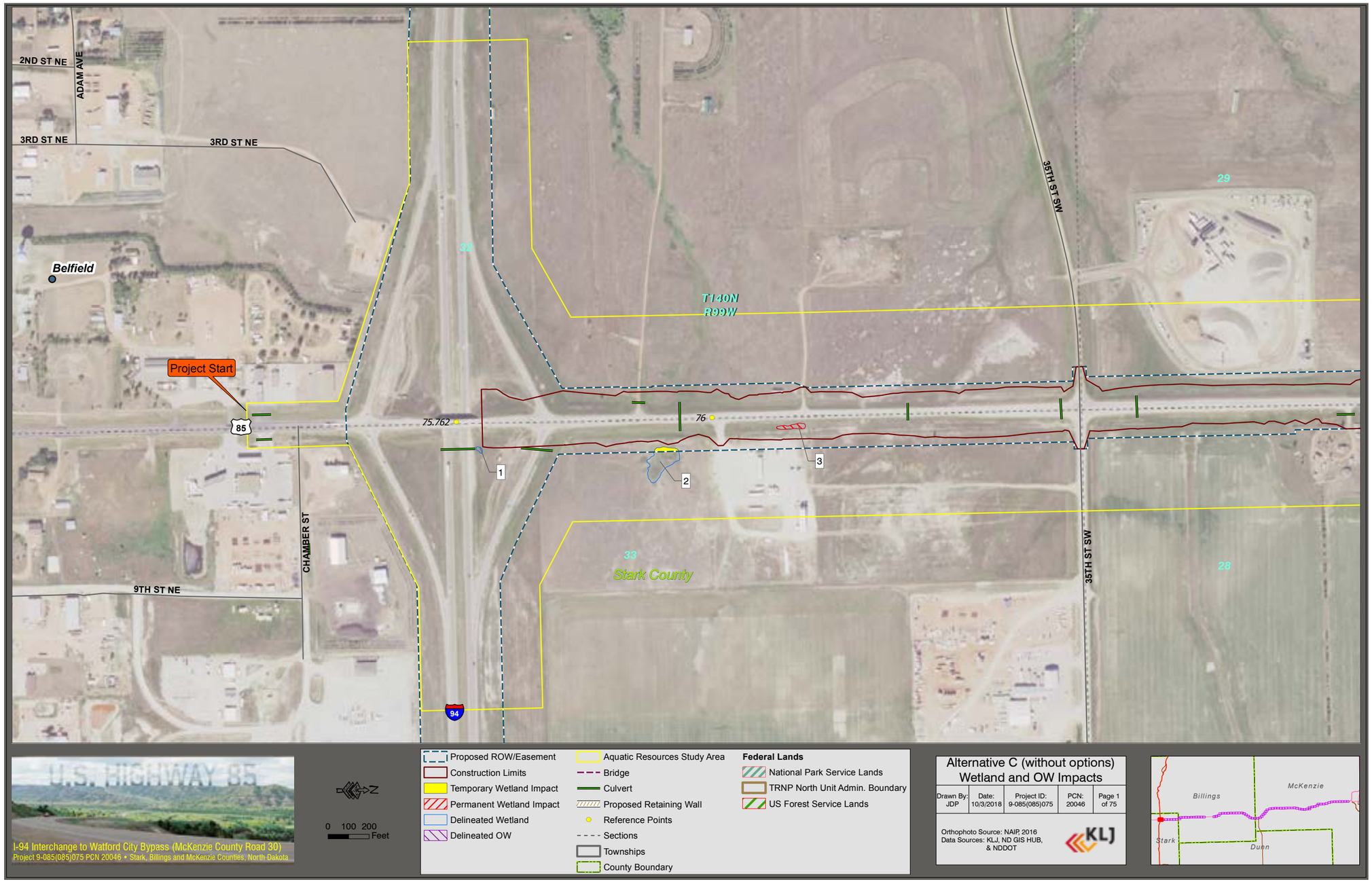
Drawn By:	Date:	Project ID:	PCN:	Page 75 of 75
JDP	10/23/2018	9-085(085)075	20046	

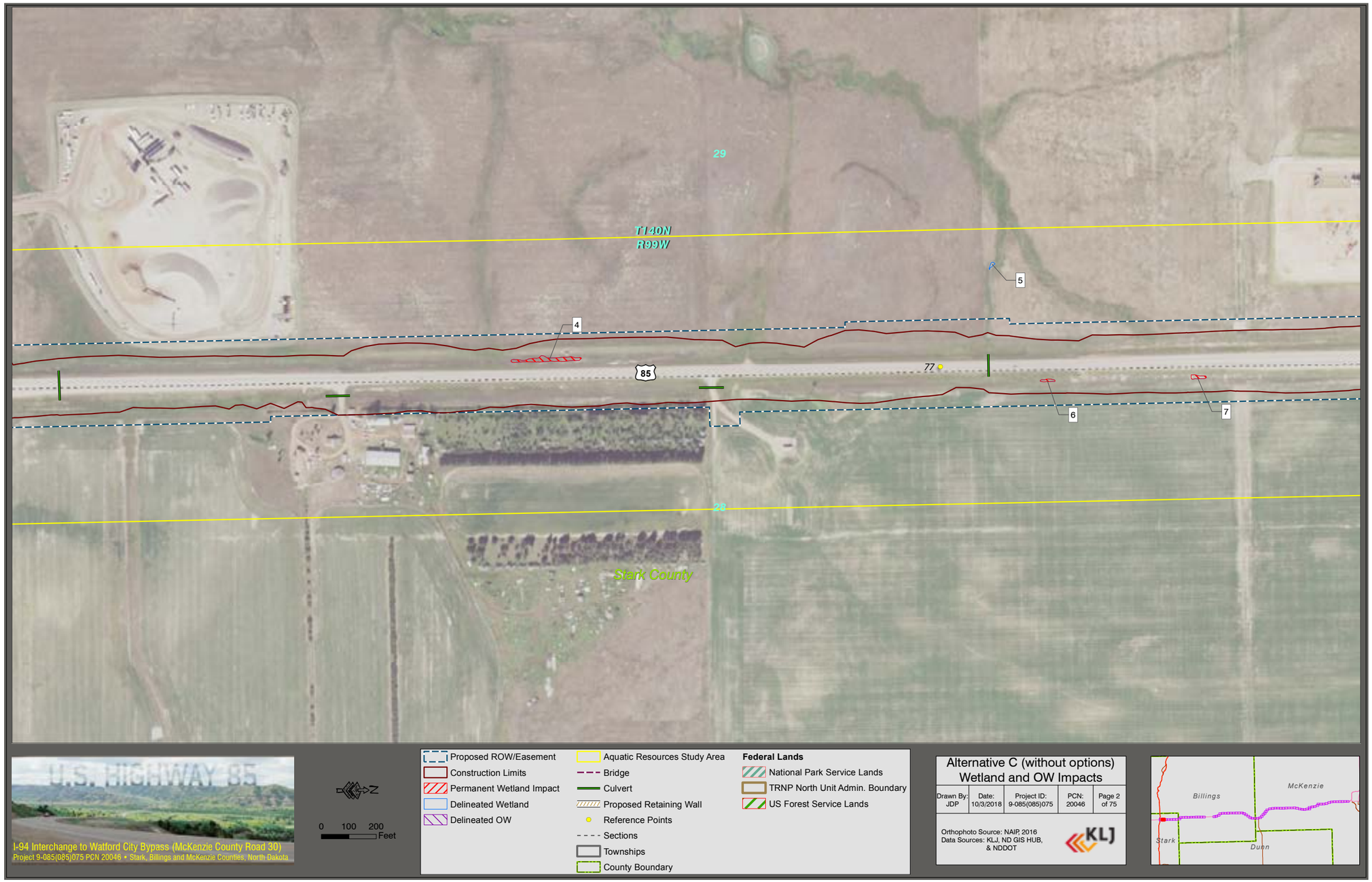
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



F.2.2. Alternative C (without options) Wetland and Other Waters Impact Maps





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

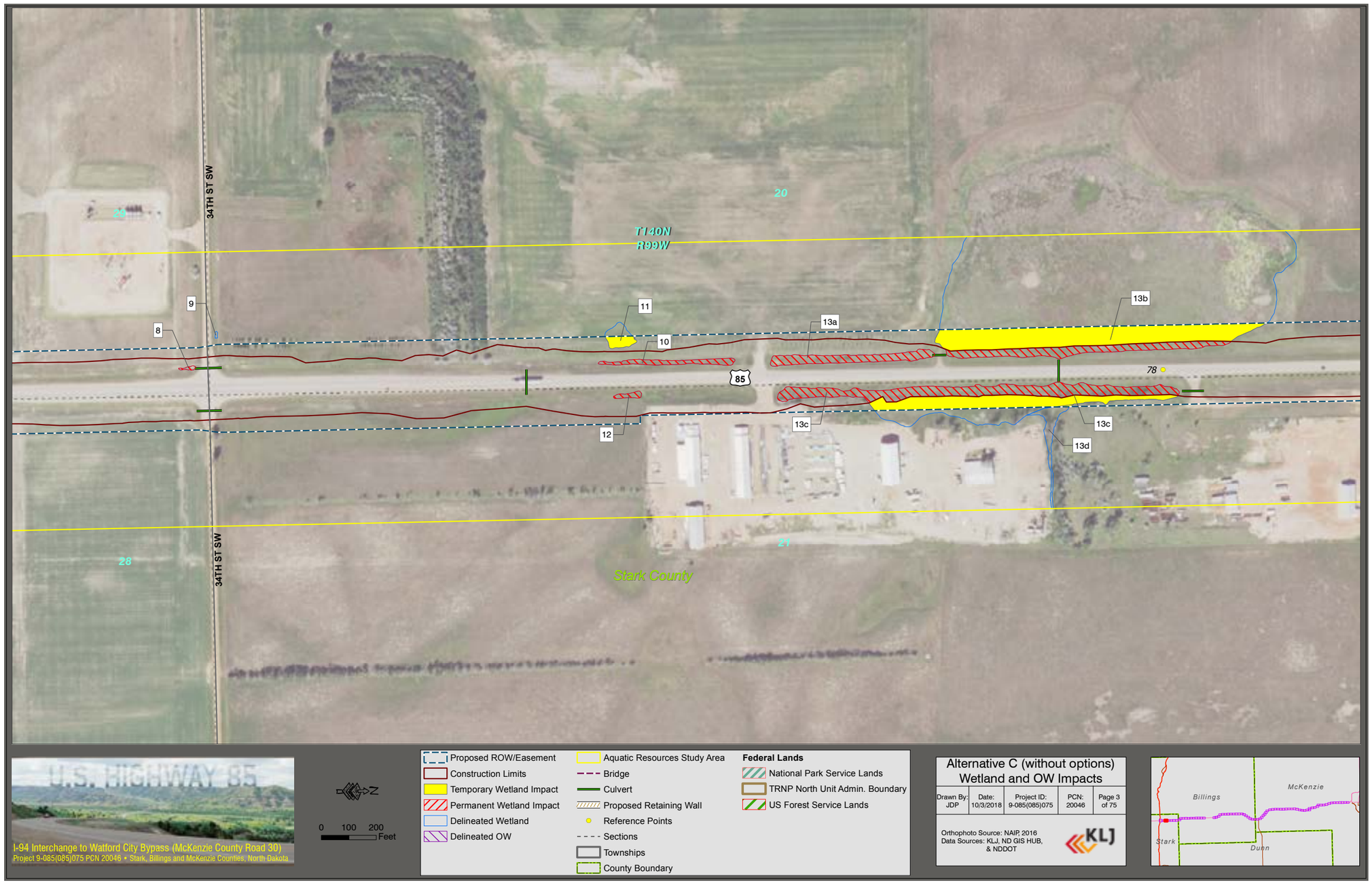
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative C (without options)
Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 2 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

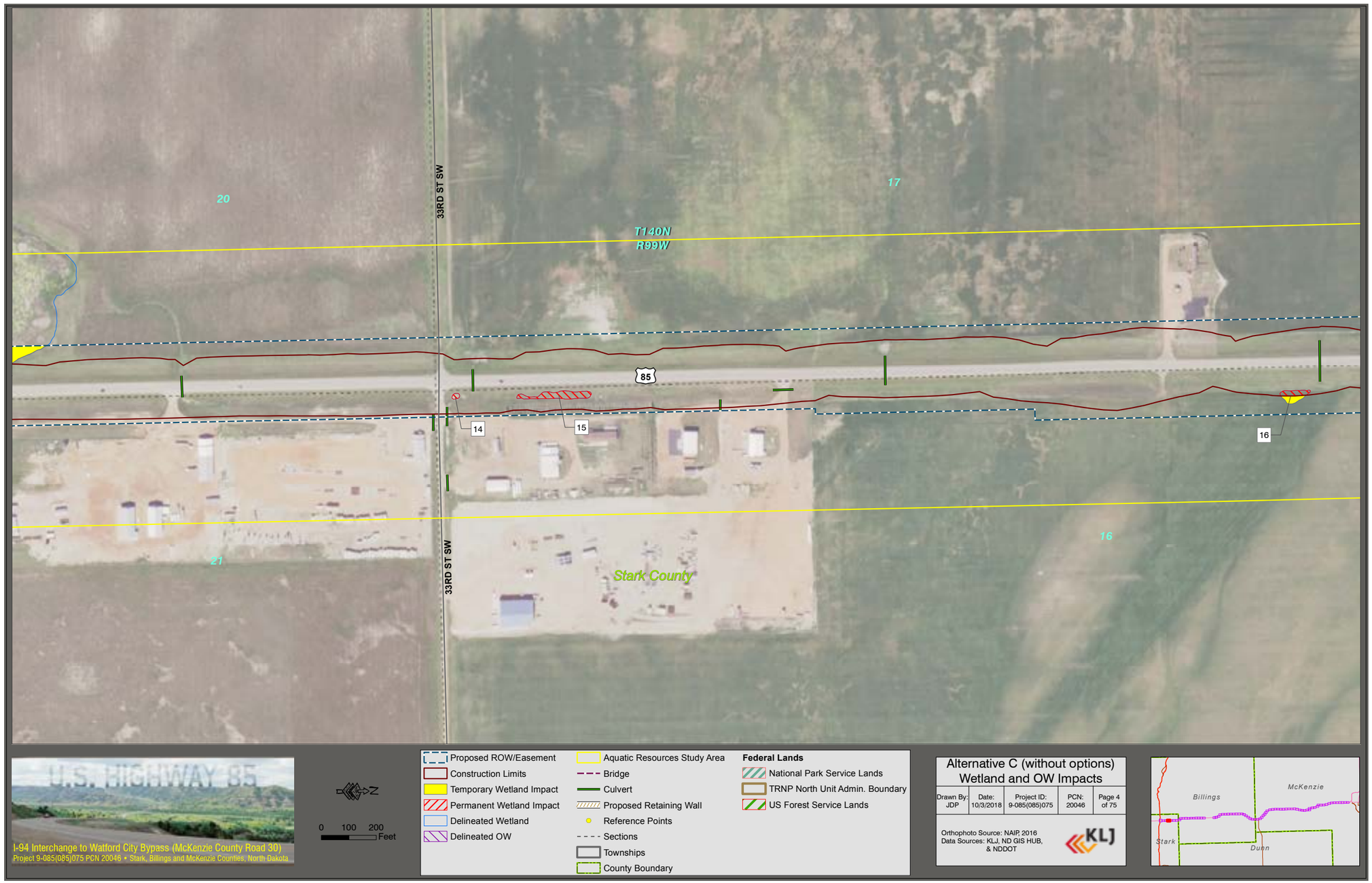
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative C (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 3 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

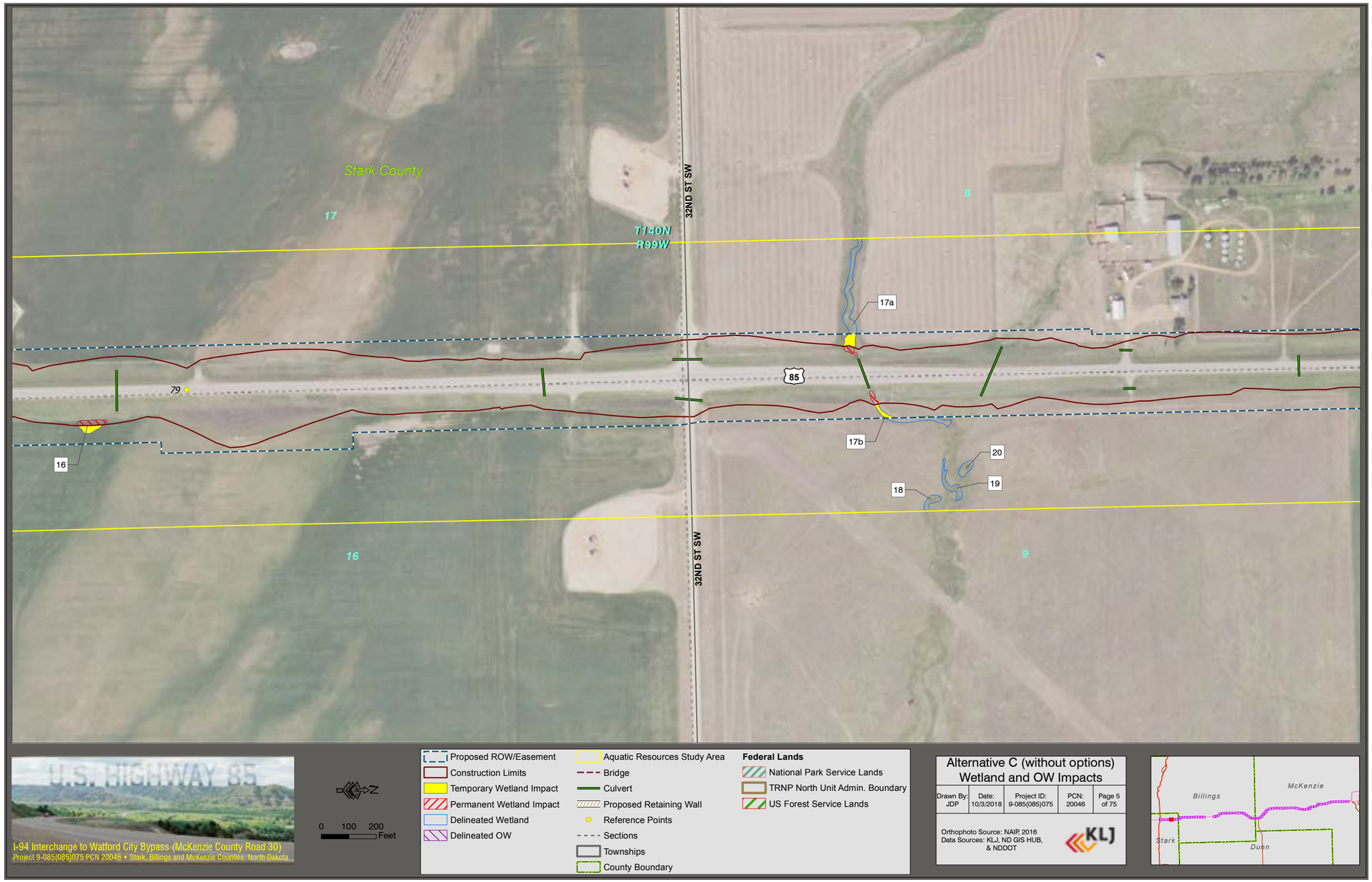
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

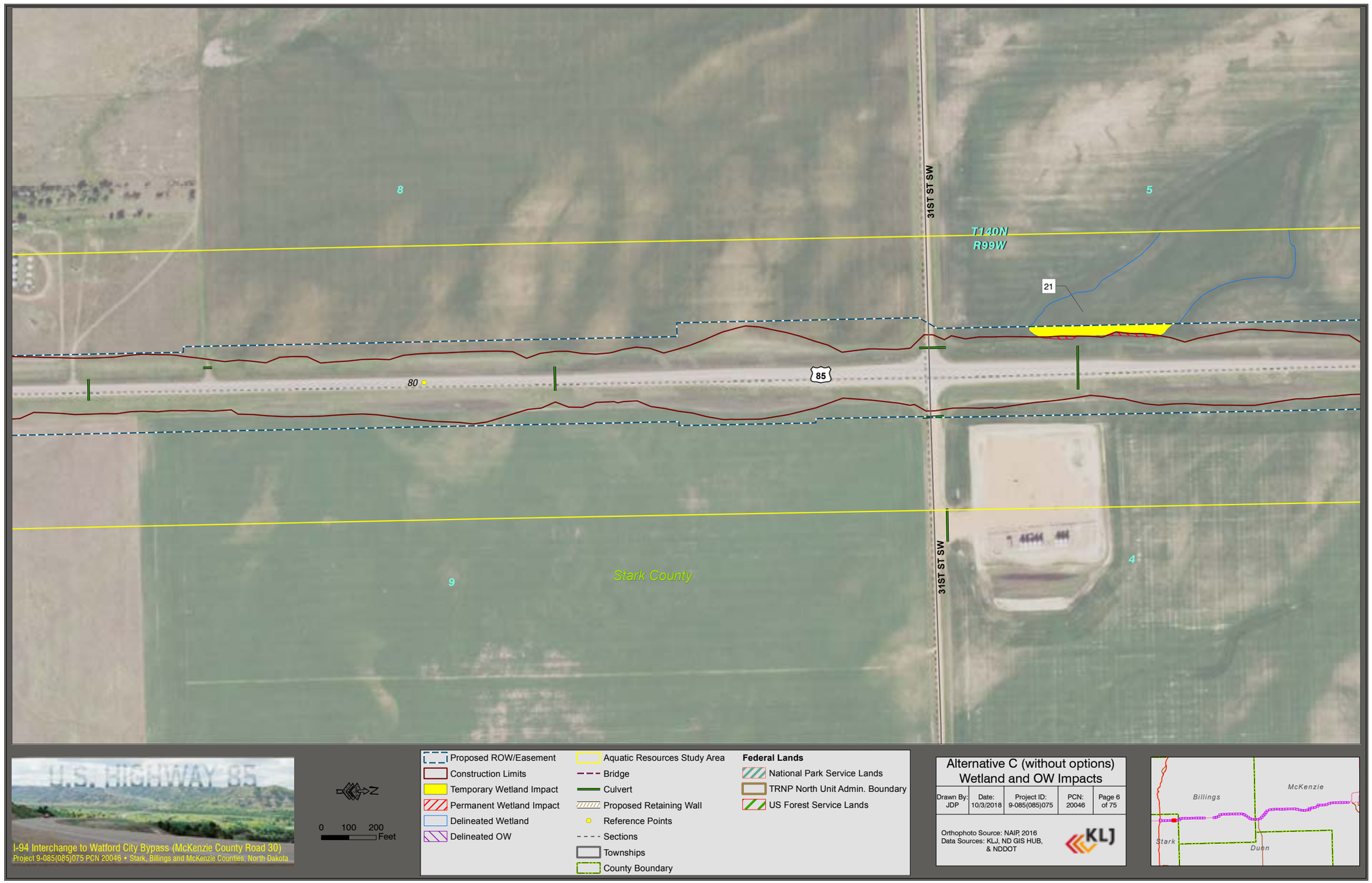
Alternative C (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 4 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


Stark County
17
T140N
R99W
32ND ST SW
8
17a
85
79
16
17b
20
19
18
16
32ND ST SW
9
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 5 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

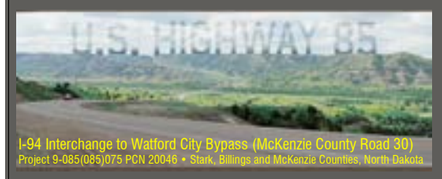
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative C (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 6 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

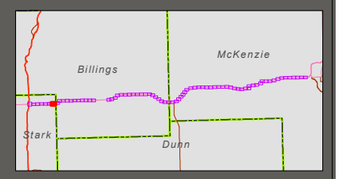
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

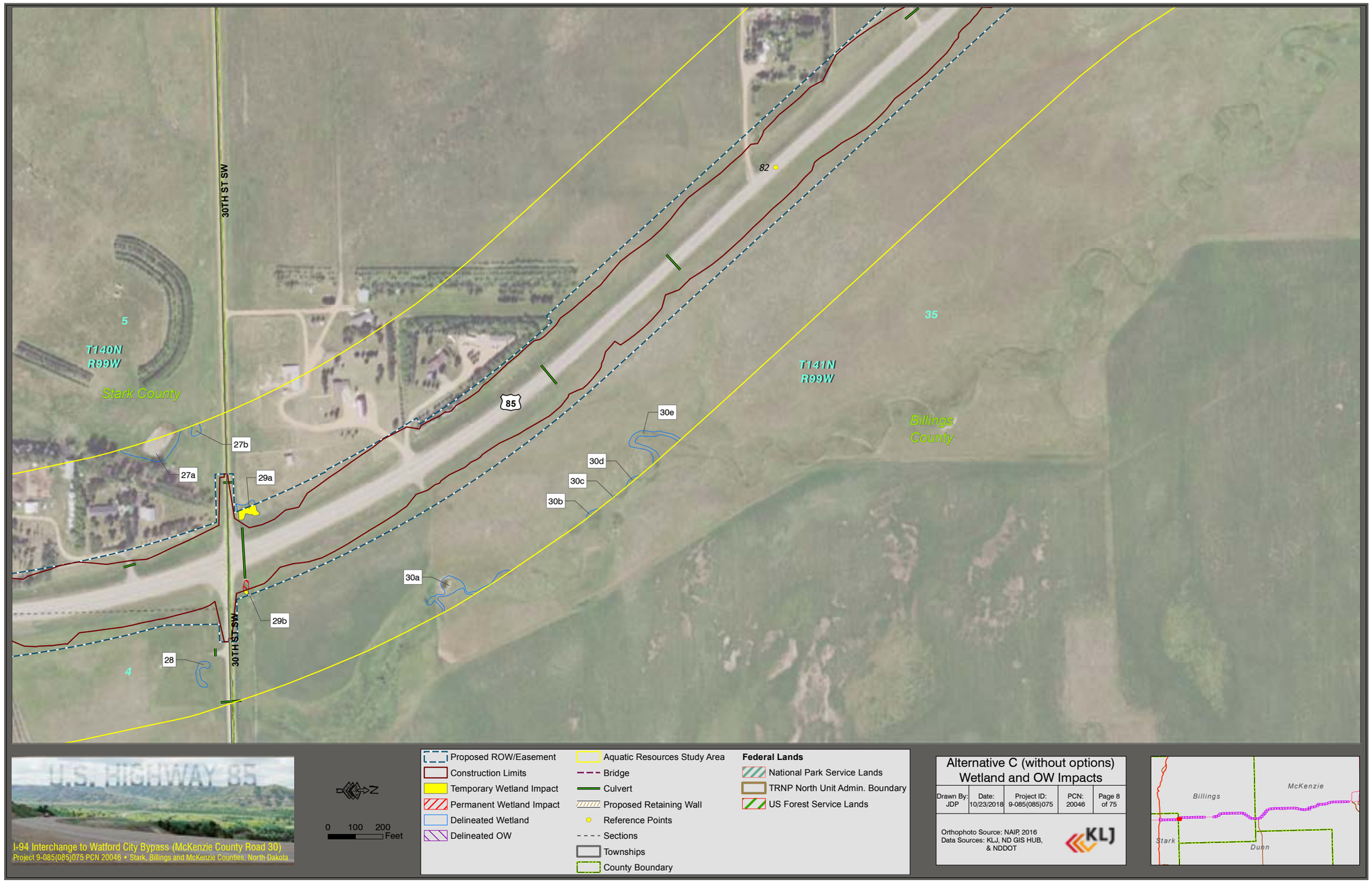
Alternative C (without options) Wetland and OW Impacts

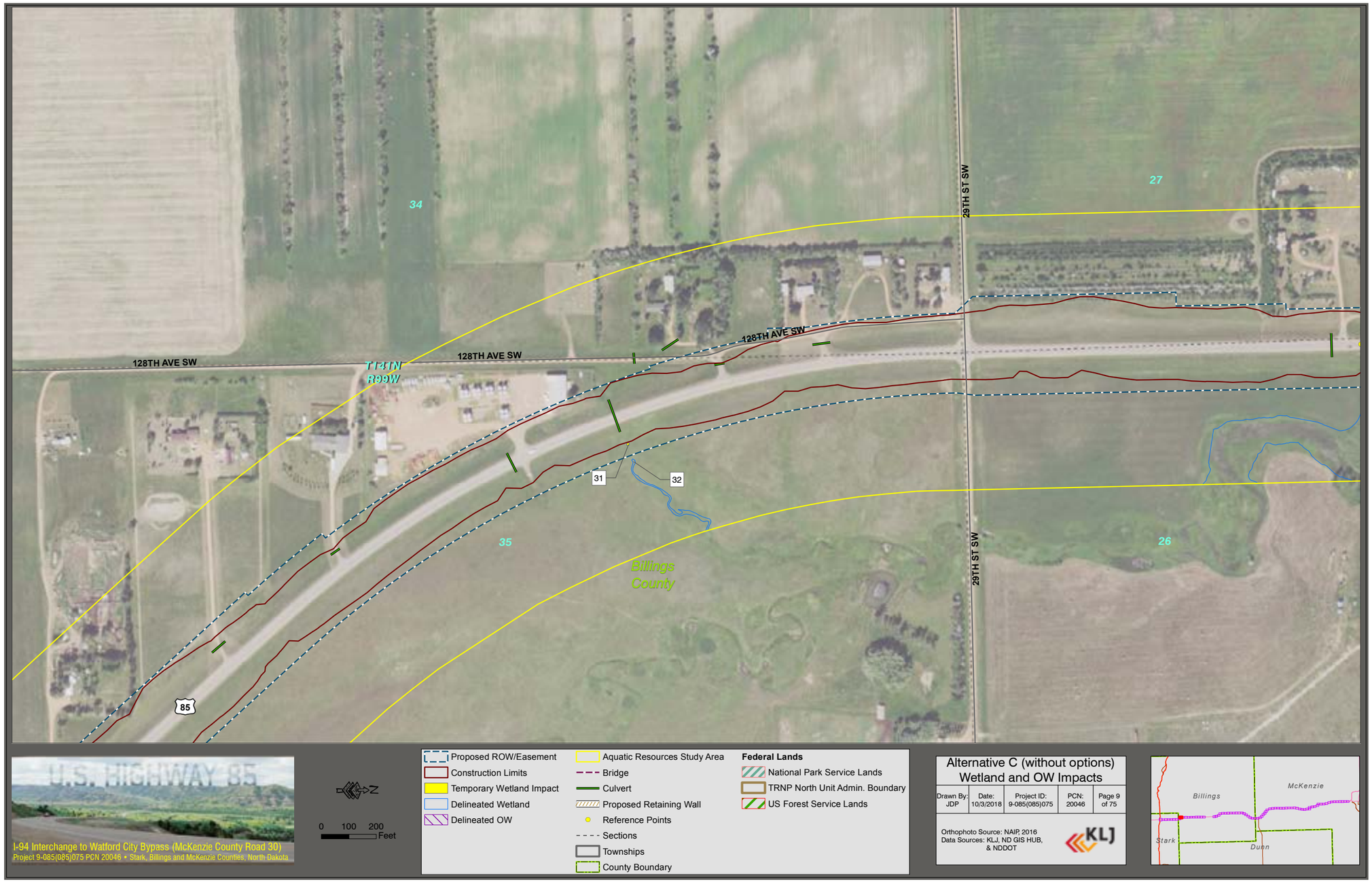
Drawn By:	Date:	Project ID:	PCN:	Page 7 of 75
JDP	10/3/2018	9-085(085)075	20046	

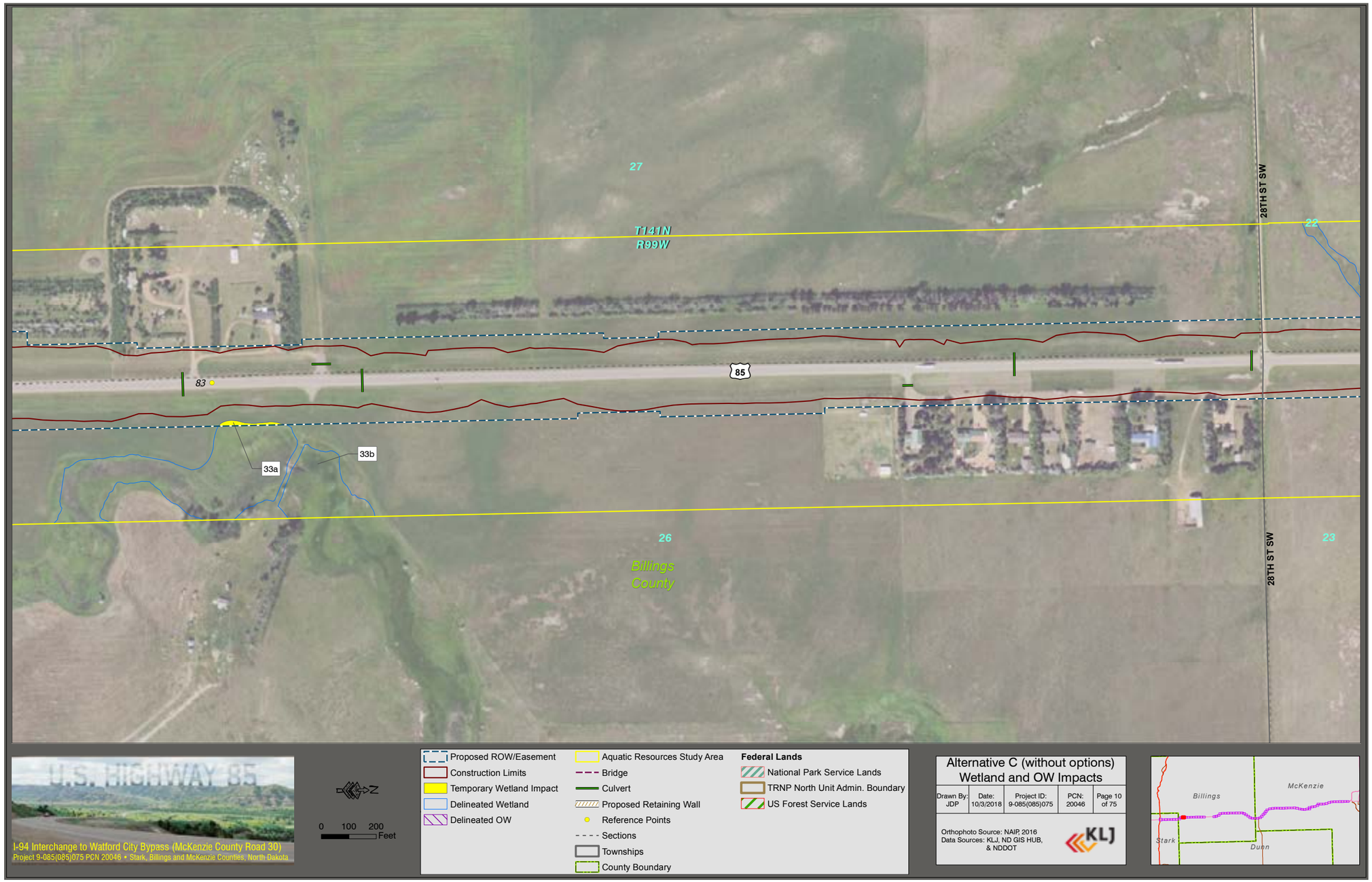
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ




30TH ST SW
82
5
T140N
R99W
Stark County
35
T141N
R99W
Billings
County
85
30e
27b
30d
27a
29a
30c
30b
30a
29b
28
30TH ST SW
4
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/23/2018
Project ID: 9-085(085)075
PCN: 20046
Page 8 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


34
27
29TH ST SW
128TH AVE SW
128TH AVE SW
128TH AVE SW
T143N
R99W
31
32
35
26
Billings
County
29TH ST SW
85
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200 Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 9 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



0 100 200 Feet

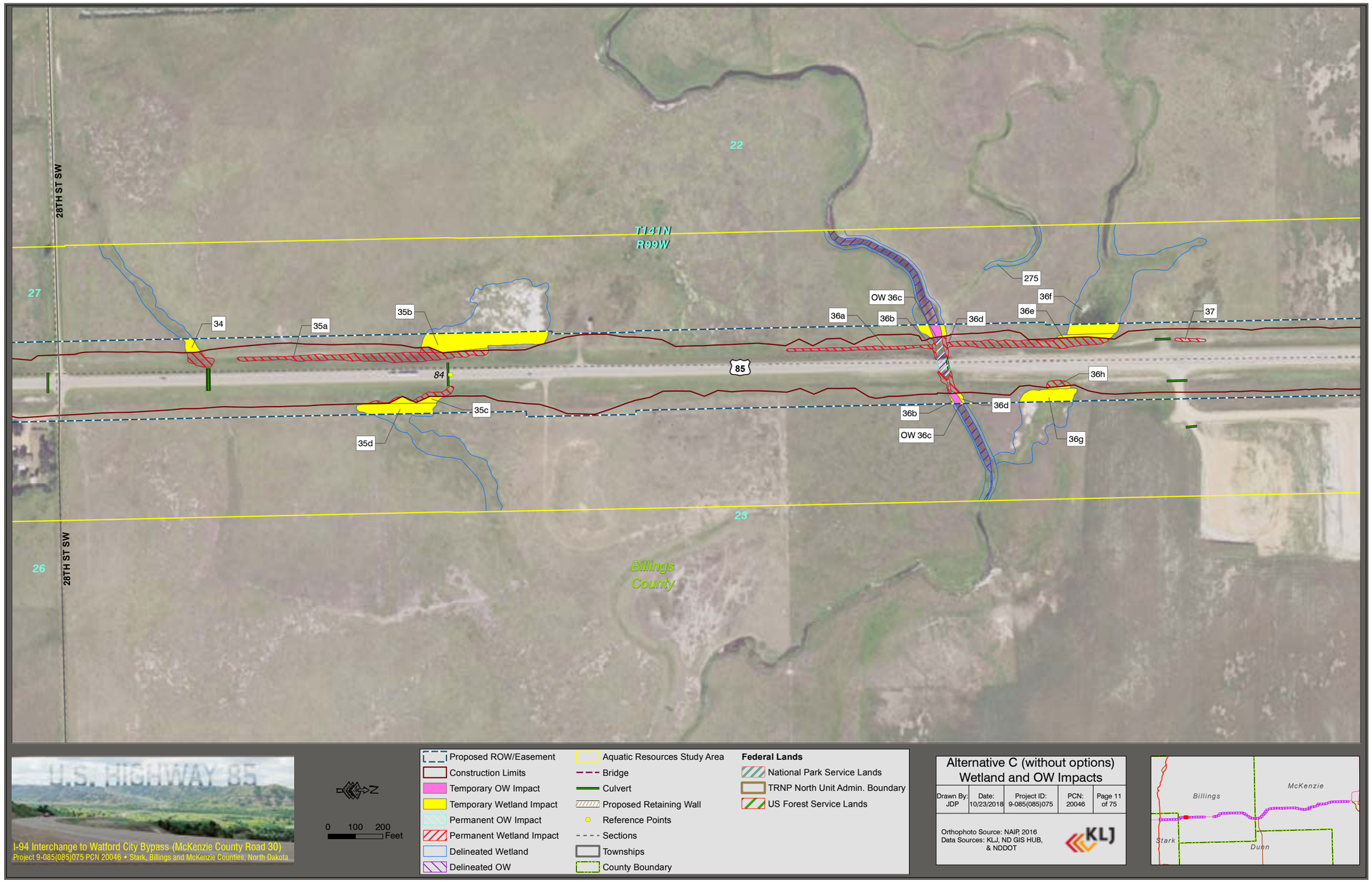
- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

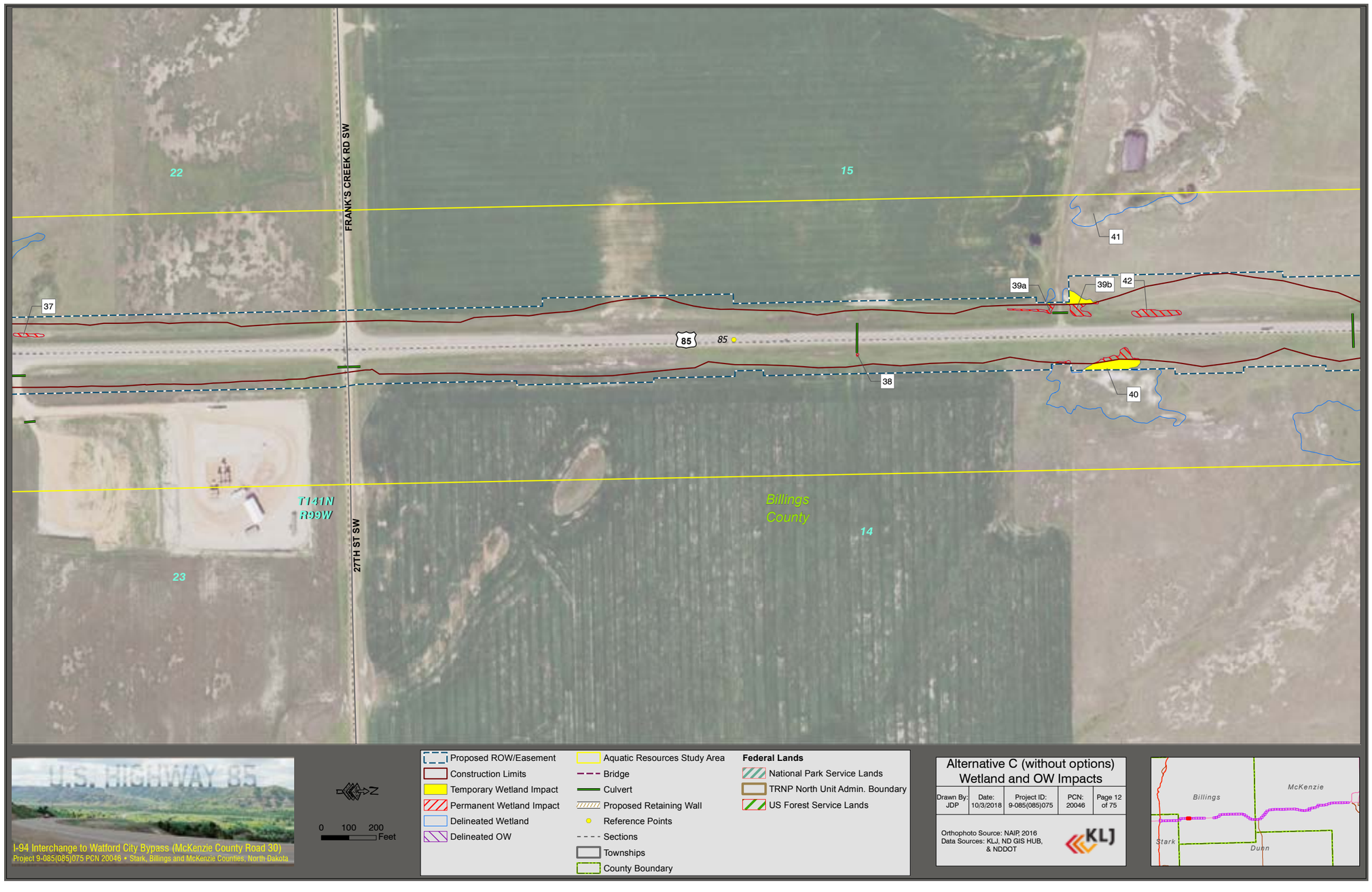
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

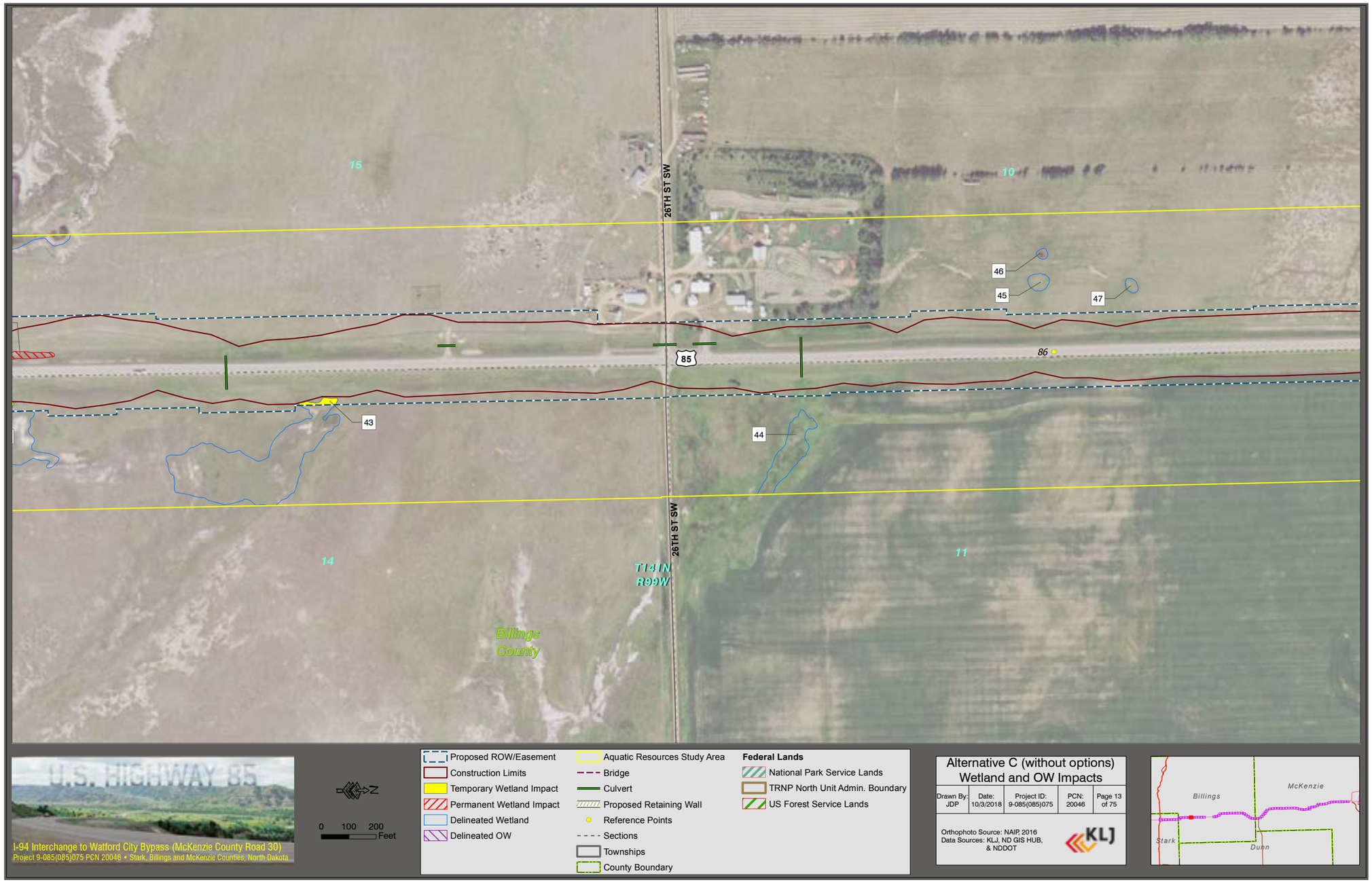
Alternative C (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 10 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT


28TH ST SW
22
T141N
R99W
27
34
35a
35b
84
35c
35d
85
275
OW 36c
36a
36b
36d
36e
36f
37
36h
36g
23
26
Billings
County
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary OW Impact
Temporary Wetland Impact
Permanent OW Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/23/2018
Project ID: 9-085(085)075
PCN: 20046
Page 11 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


22
15
FRANK'S CREEK RD SW
41
39a
39b
42
37
85
85
38
40
T141N
R99W
Billings
County
14
23
27TH ST SW
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
0 100 200
Feet
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 12 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

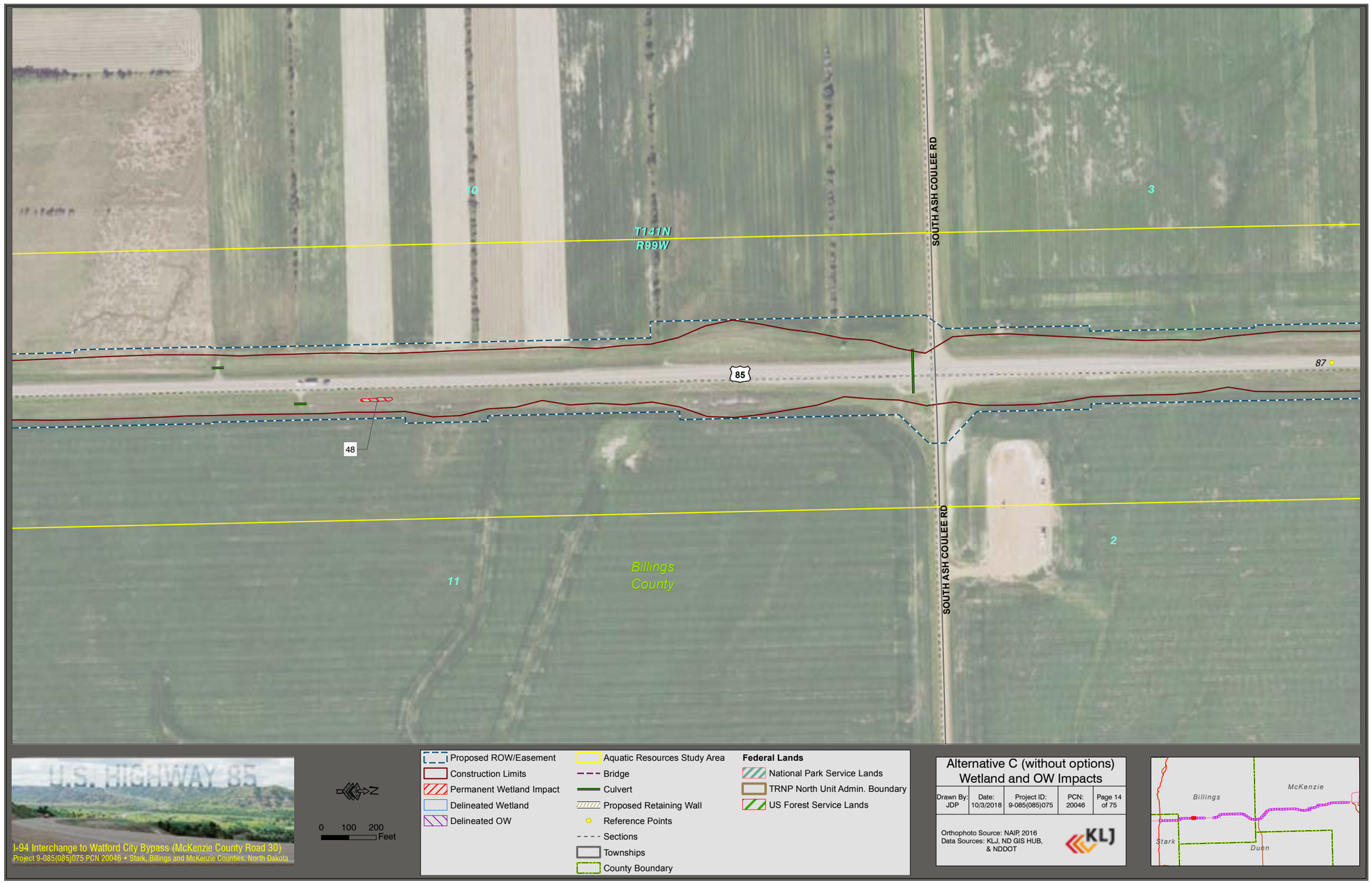
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

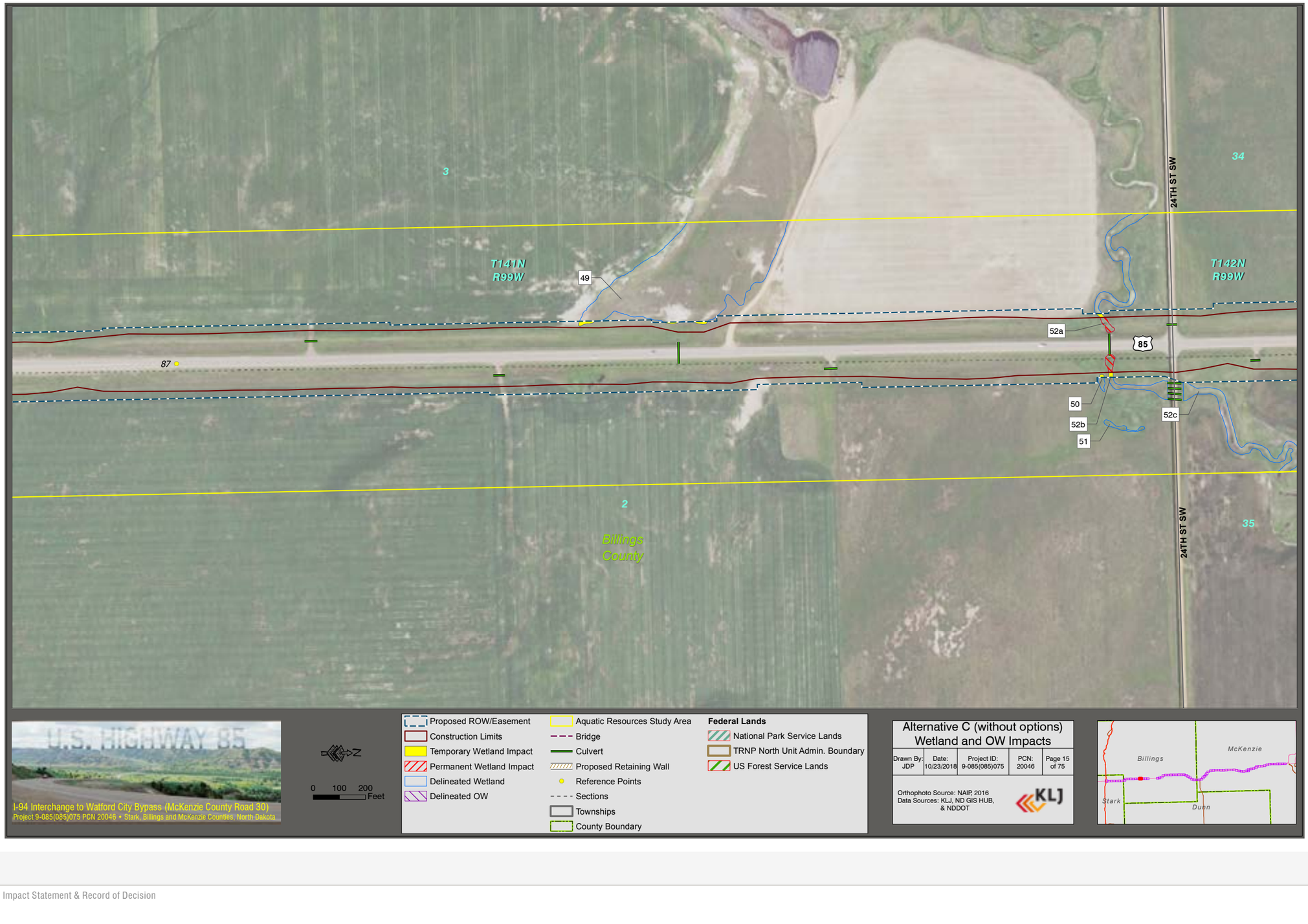
Alternative C (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 13 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


10
T141N
R99W
SOUTH ASH COULEE RD
3
87
85
48
11
Billings
County
SOUTH ASH COULEE RD
2
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 14 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

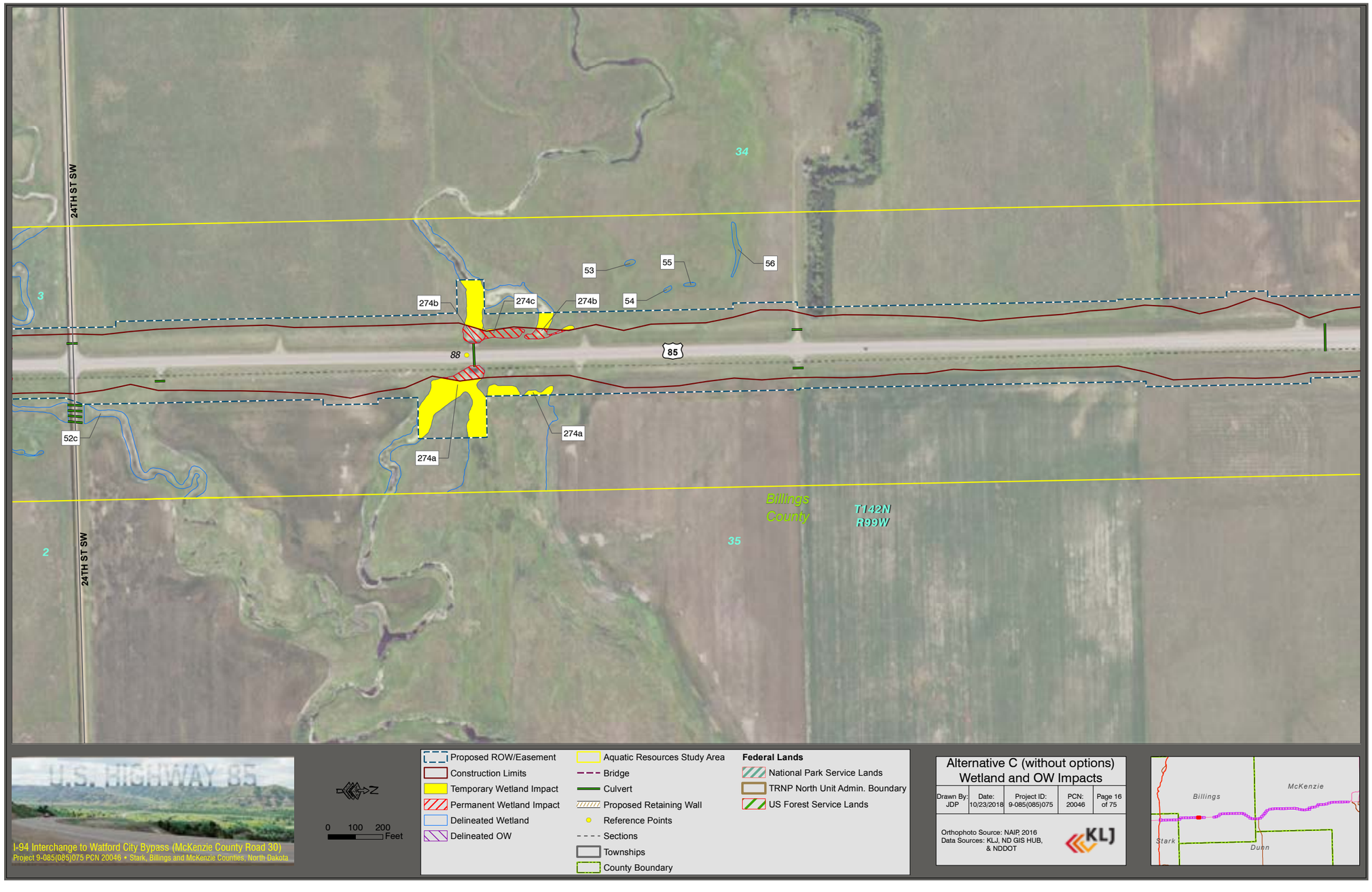
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

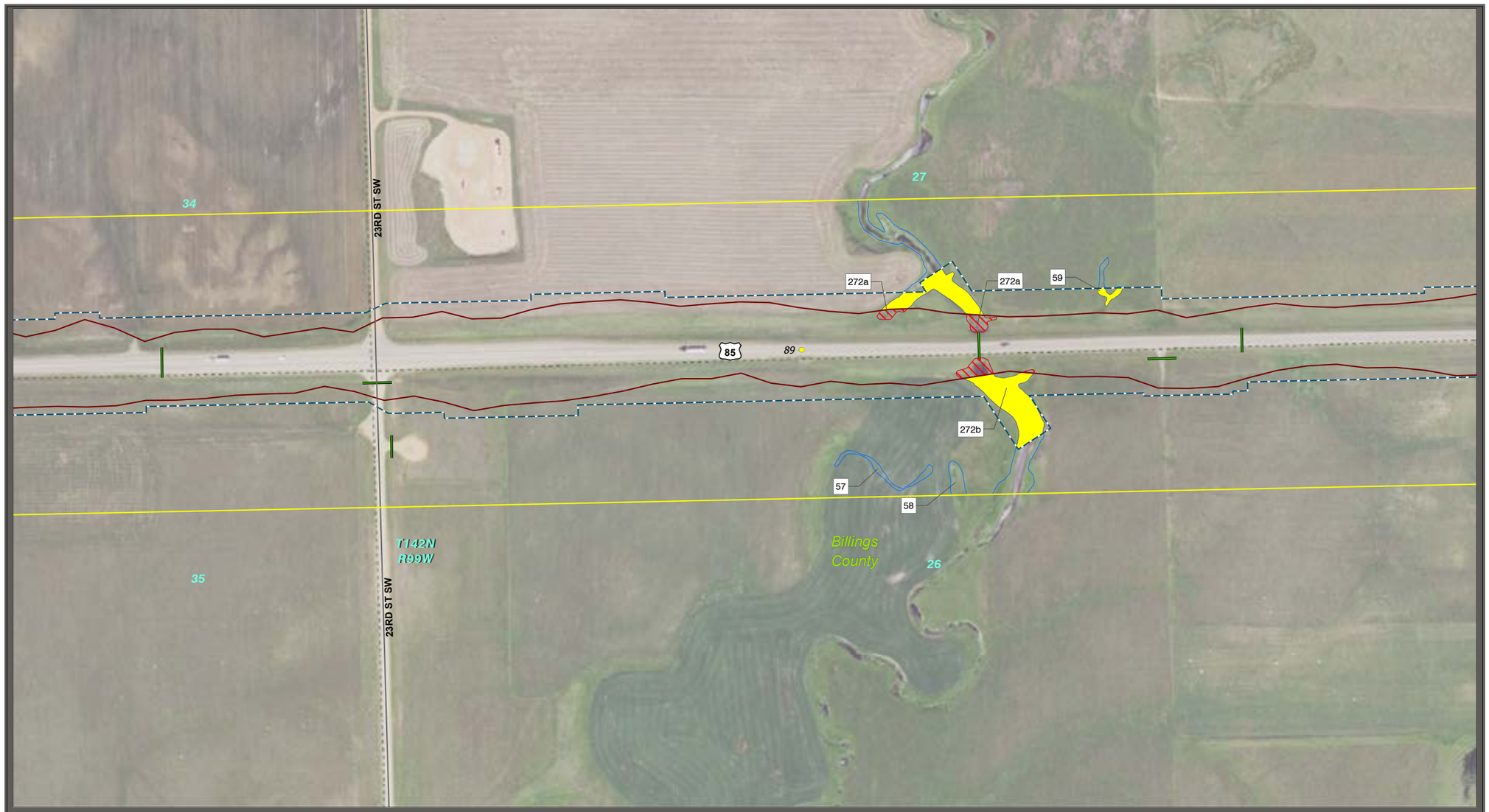
Alternative C (without options)
Wetland and OW Impacts

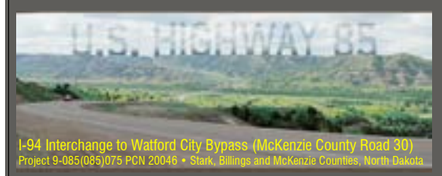
Drawn By:	Date:	Project ID:	PCN:	Page 15 of 75
JDP	10/23/2018	9-085(085)075	20046	

Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


24TH ST SW
34
3
2
35
T142N
R99W
Billings
County
53
55
56
54
274b
274c
274b
88
85
52c
274a
274a
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
0 100 200
Feet
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/23/2018
Project ID: 9-085(085)075
PCN: 20046
Page 16 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

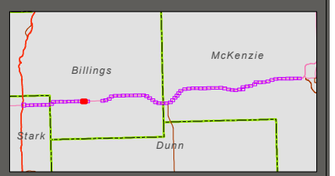
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

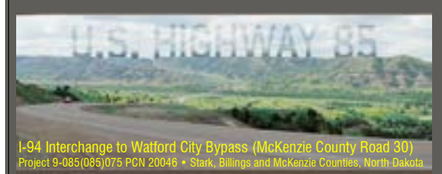
Alternative C (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 17 of 75
JDP	10/23/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

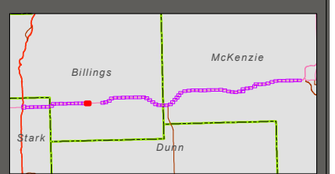
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

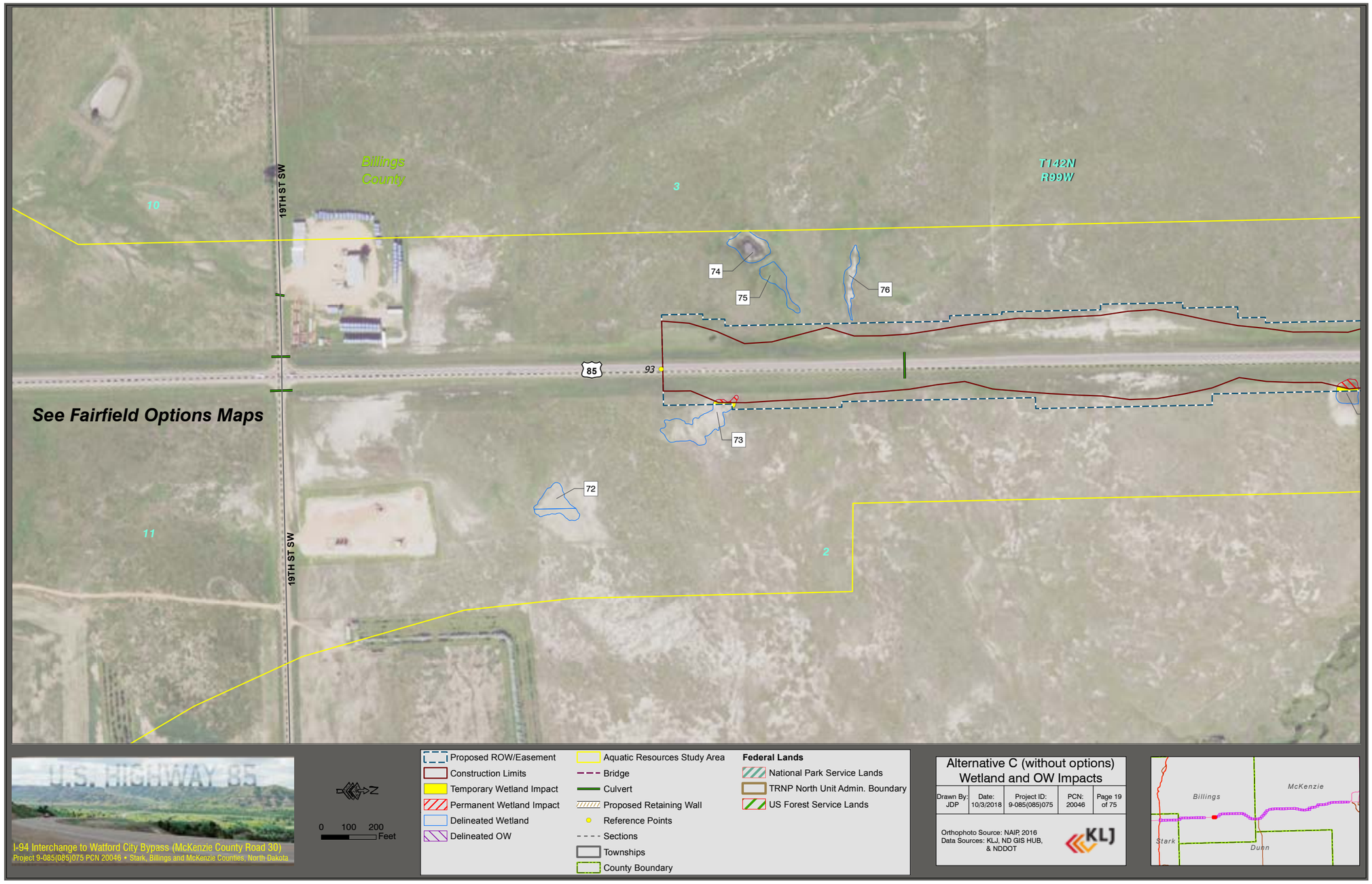
Alternative C (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 18 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ





0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

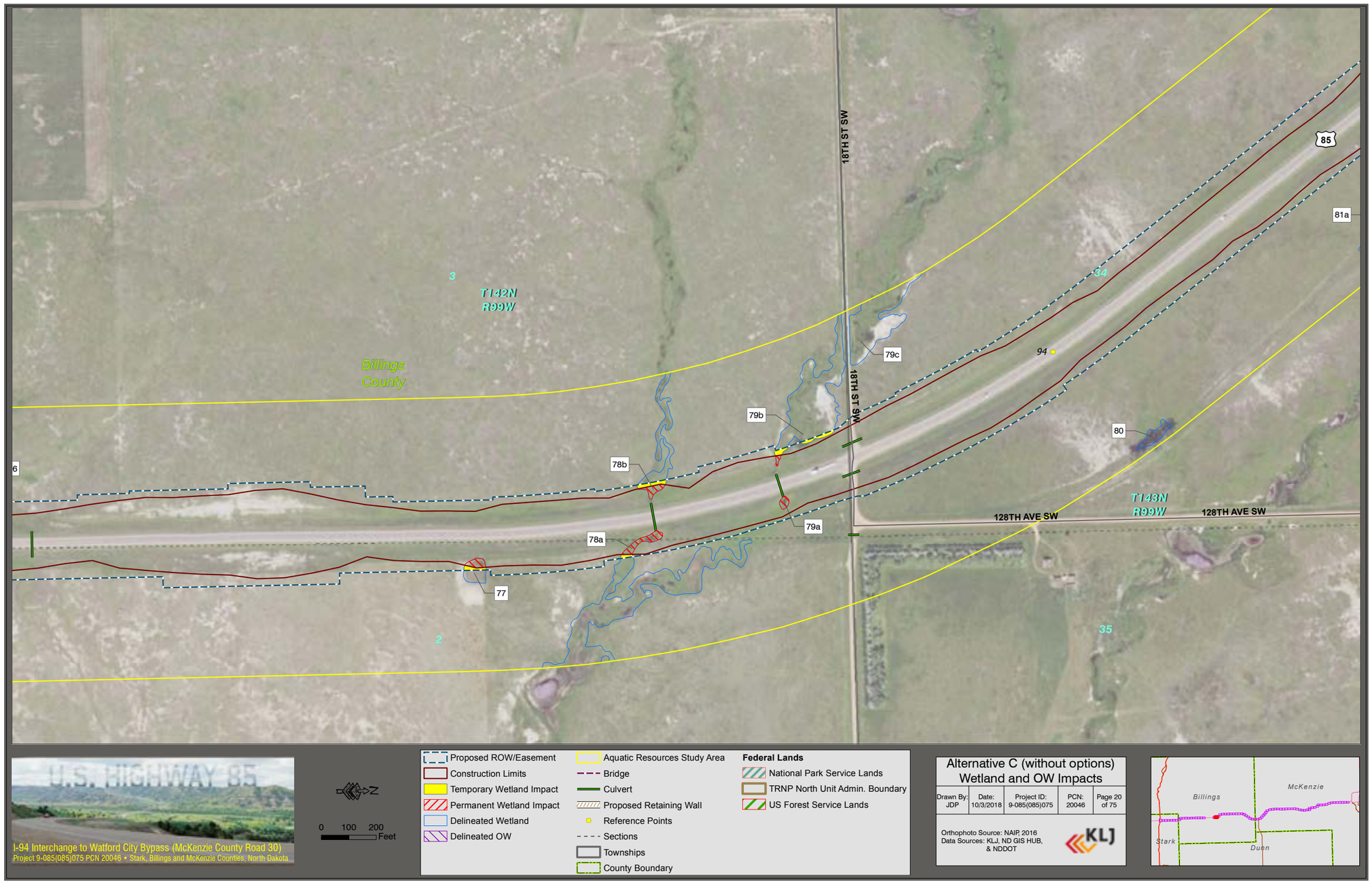
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

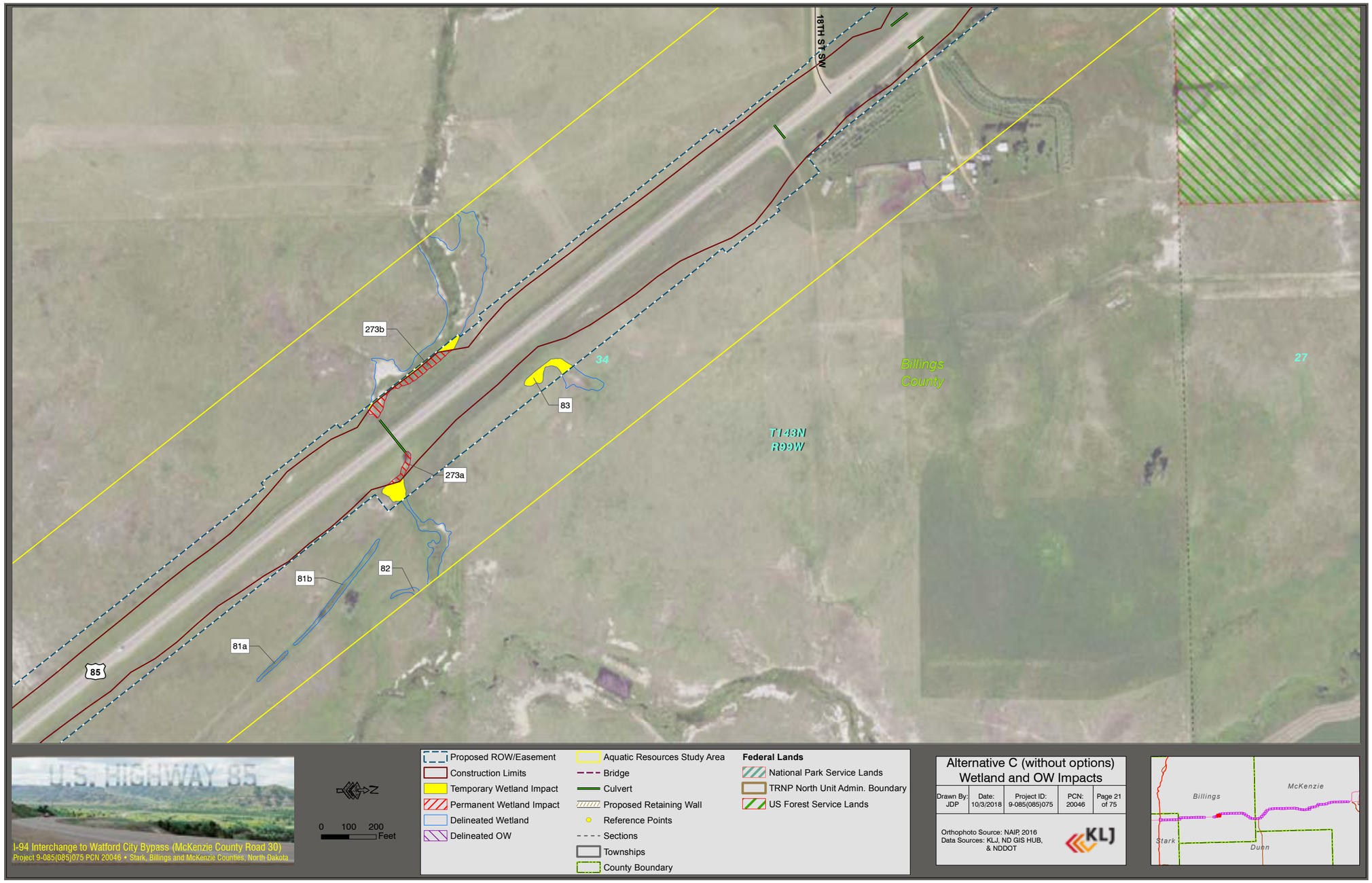
Alternative C (without options) Wetland and OW Impacts

Drawn By: JDP	Date: 10/3/2018	Project ID: 9-085(085)075	PCN: 20046	Page 19 of 75

Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


18TH ST SW
85
81a
3
T142N
R99W
Billings
County
79c
94
34
79b
18TH ST SW
80
78b
T143N
R99W
128TH AVE SW
128TH AVE SW
79a
78a
77
6
2
35
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
0 100 200 Feet
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 20 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota



N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

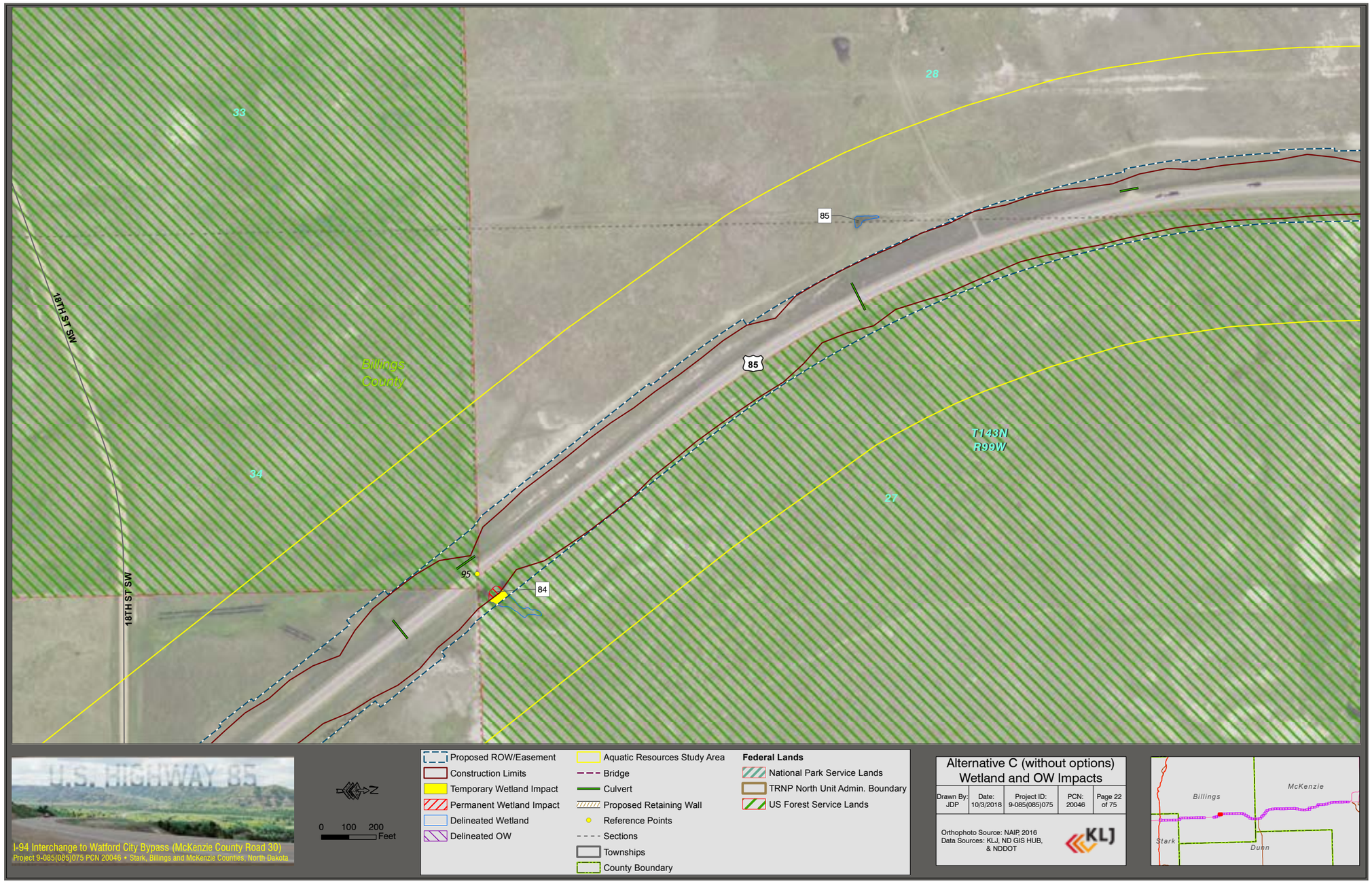
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

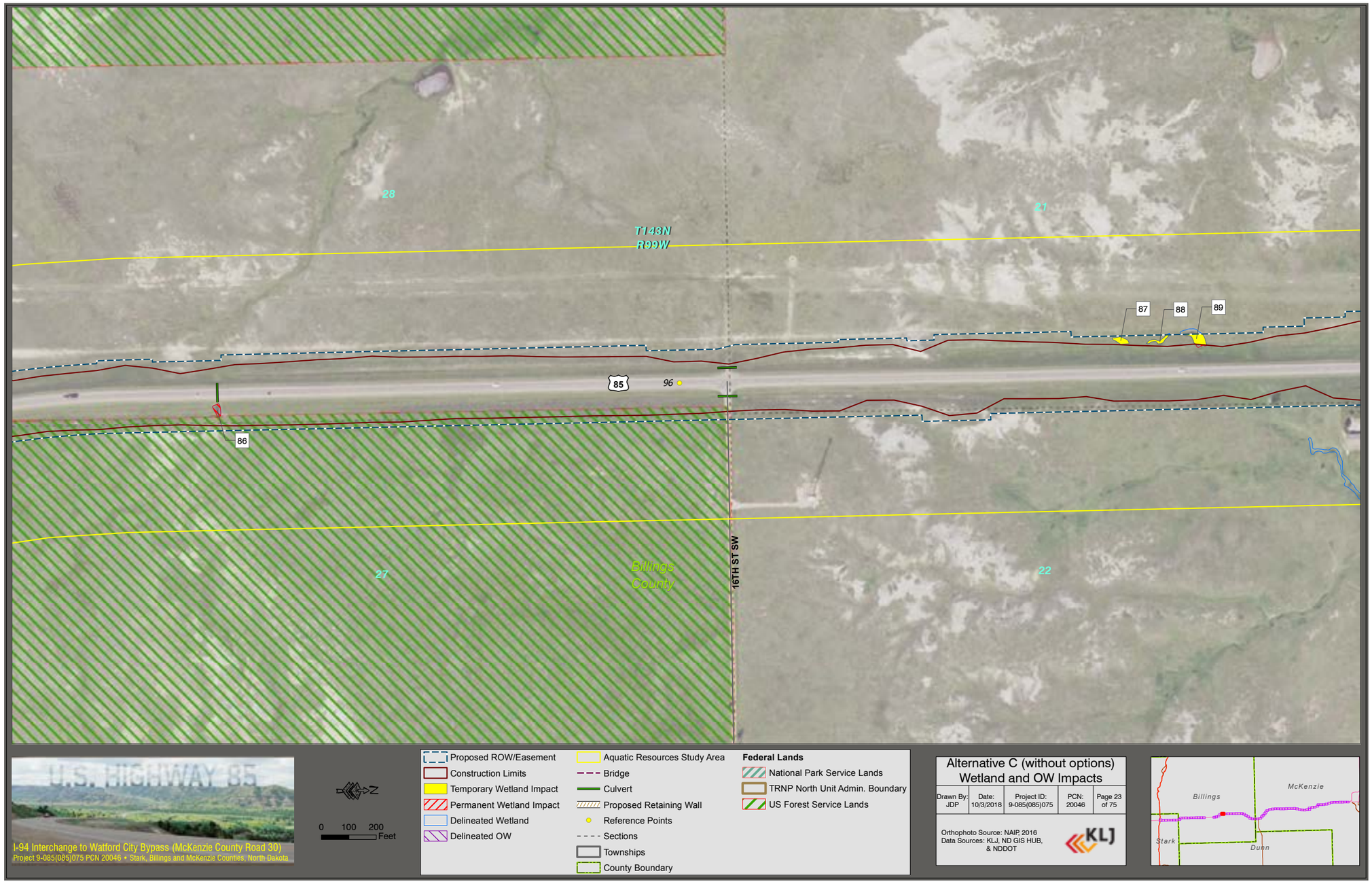
Alternative C (without options) Wetland and OW Impacts

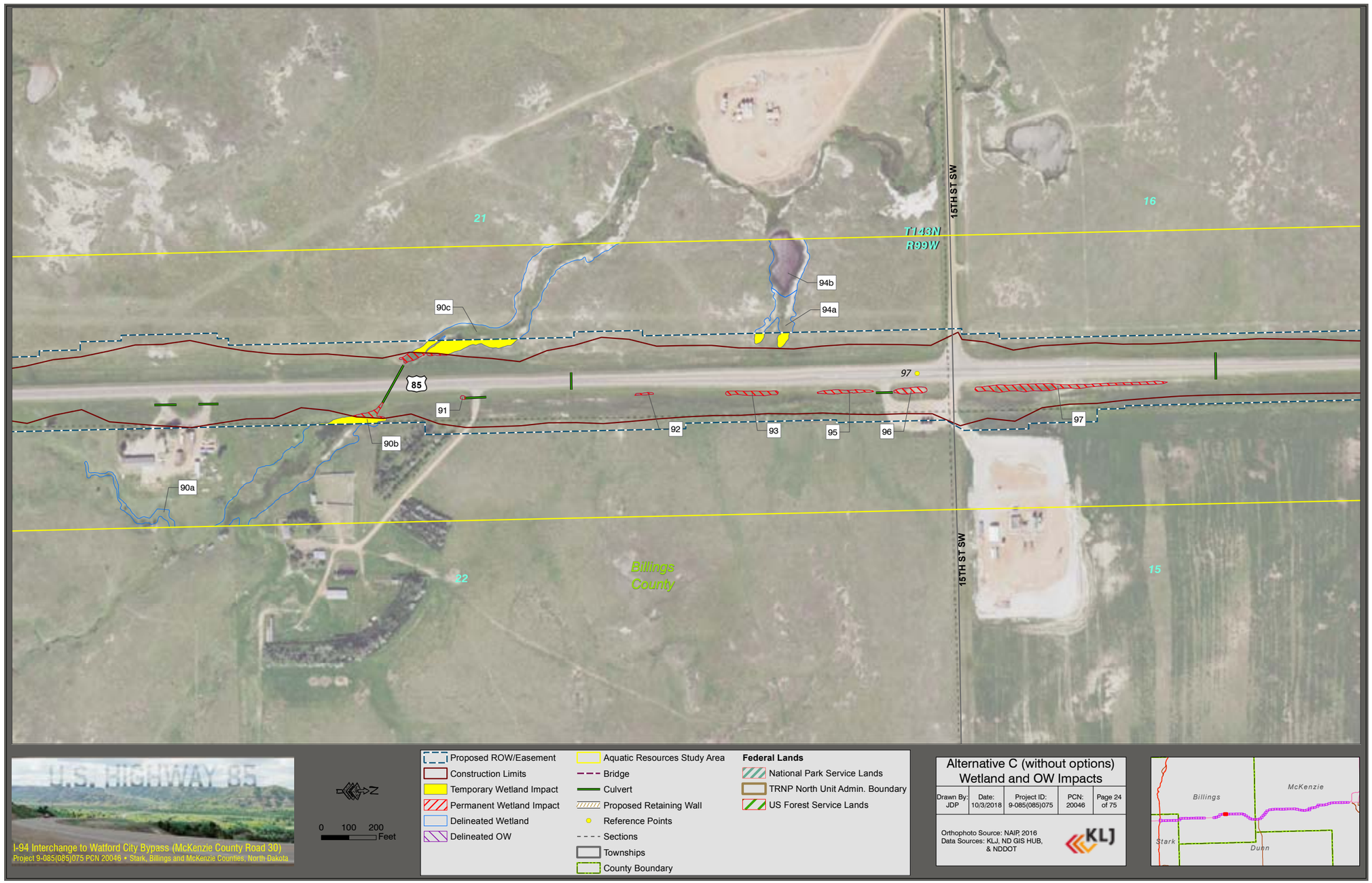
Drawn By:	Date:	Project ID:	PCN:	Page 21 of 75
JDP	10/3/2018	9-085(085)075	20046	

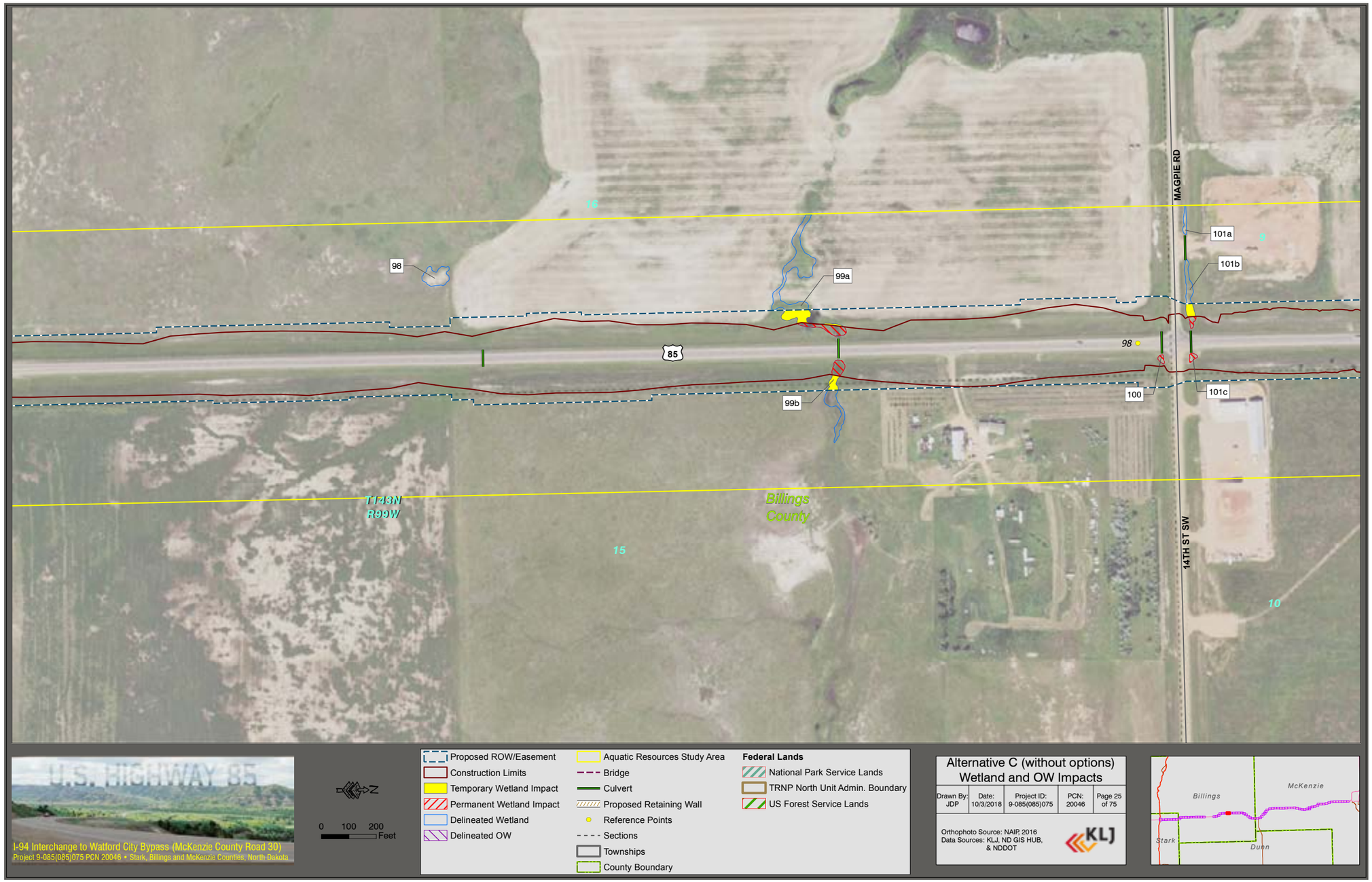
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

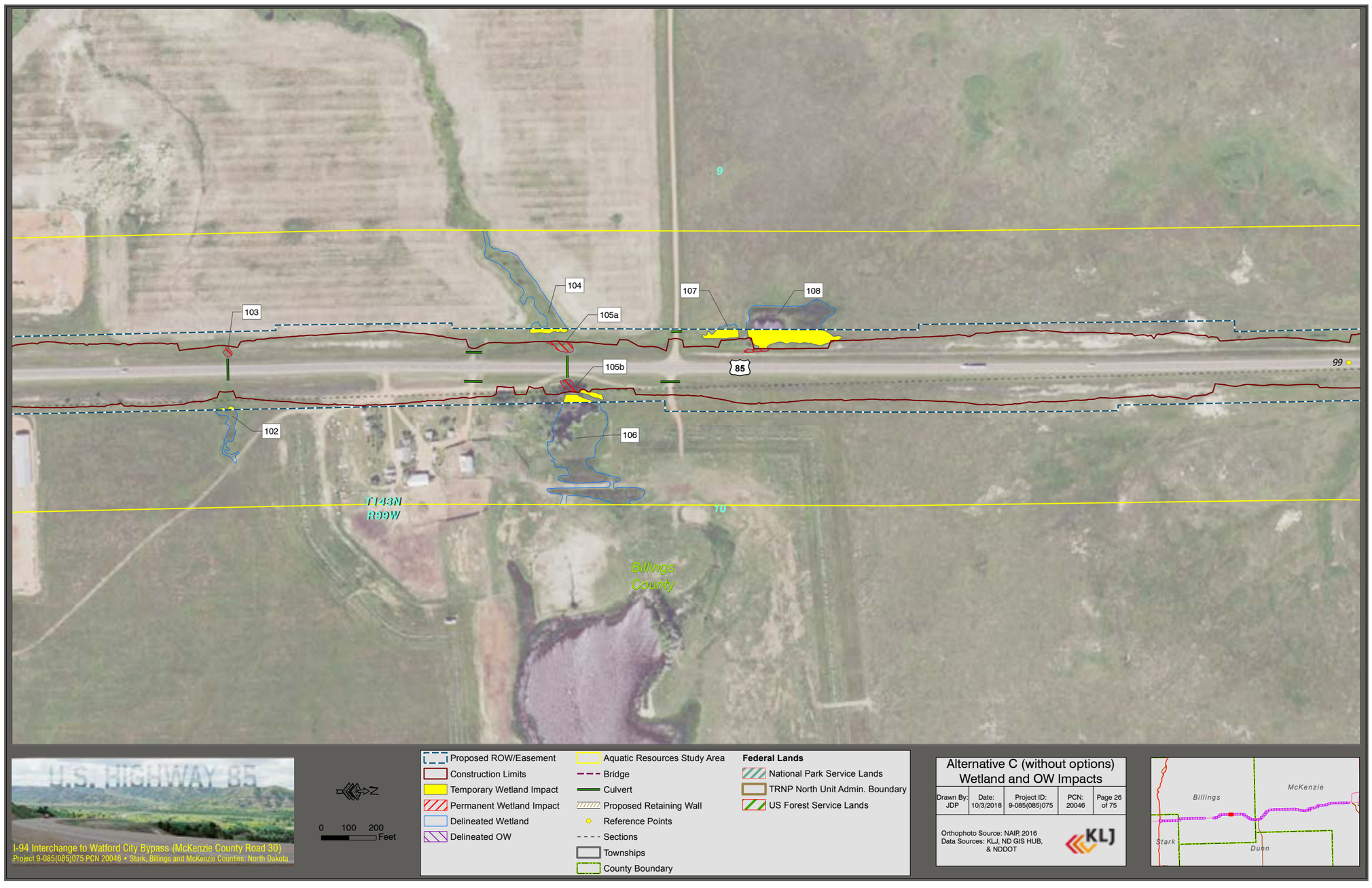
KLJ


33
28
34
27
95
84
85
85
18TH ST SW
18TH ST SW
Billings
County
T143N
R99W
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 22 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


28
21
T143N
R99W
87
88
89
85
96
86
27
Billings
County
16TH ST SW
22
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 23 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


21
16
22
15
15TH ST SW
T143N
R99W
Billings
County
85
90a
90b
90c
91
92
93
94a
94b
95
96
97
97
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 24 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


MAGPIE RD
14TH ST SW
98
99a
99b
100
101a
101b
101c
85
T143N
R99W
Billings
County
16
15
10
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
0 100 200 Feet
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 25 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



0 100 200 Feet

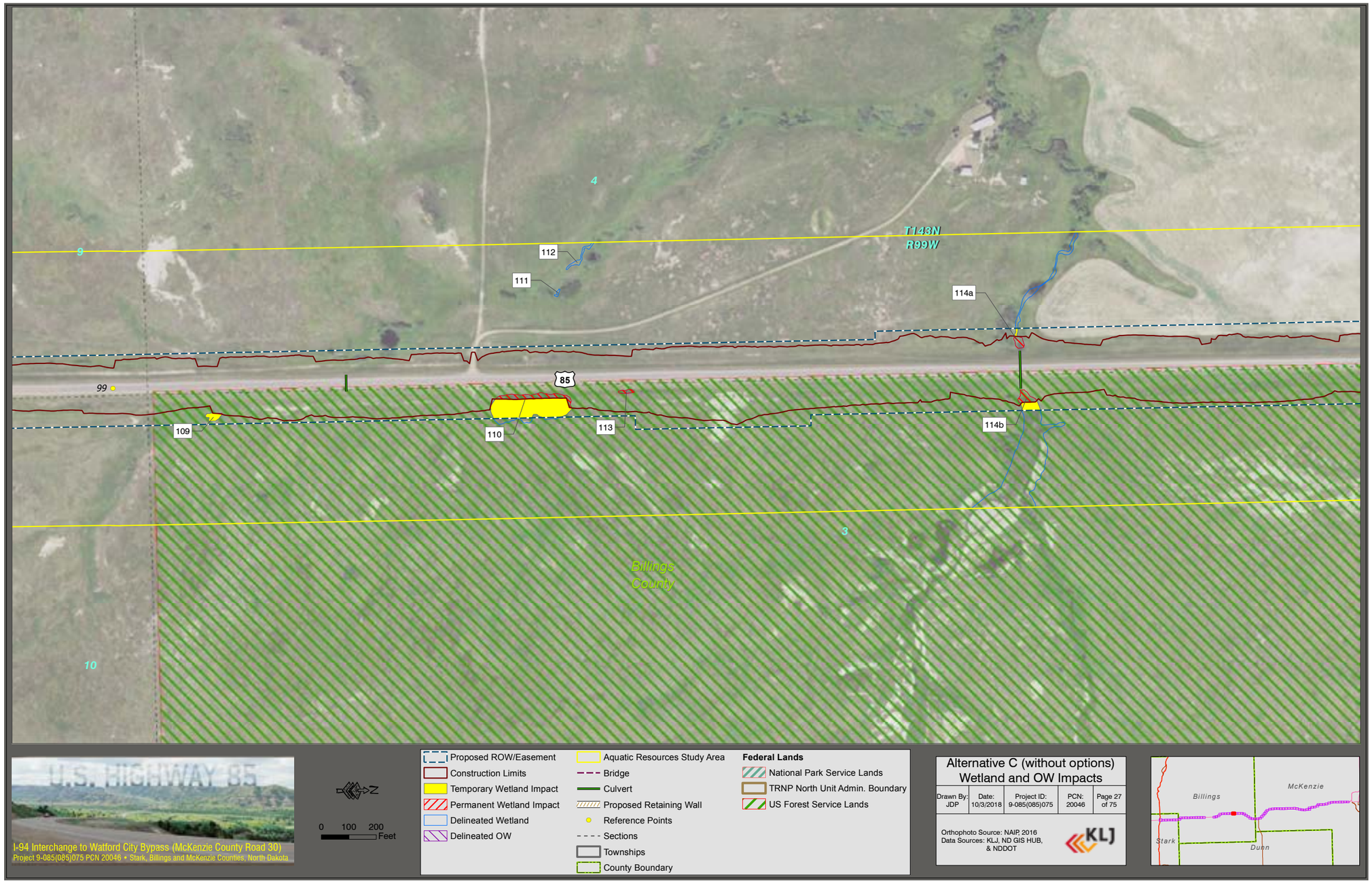
- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

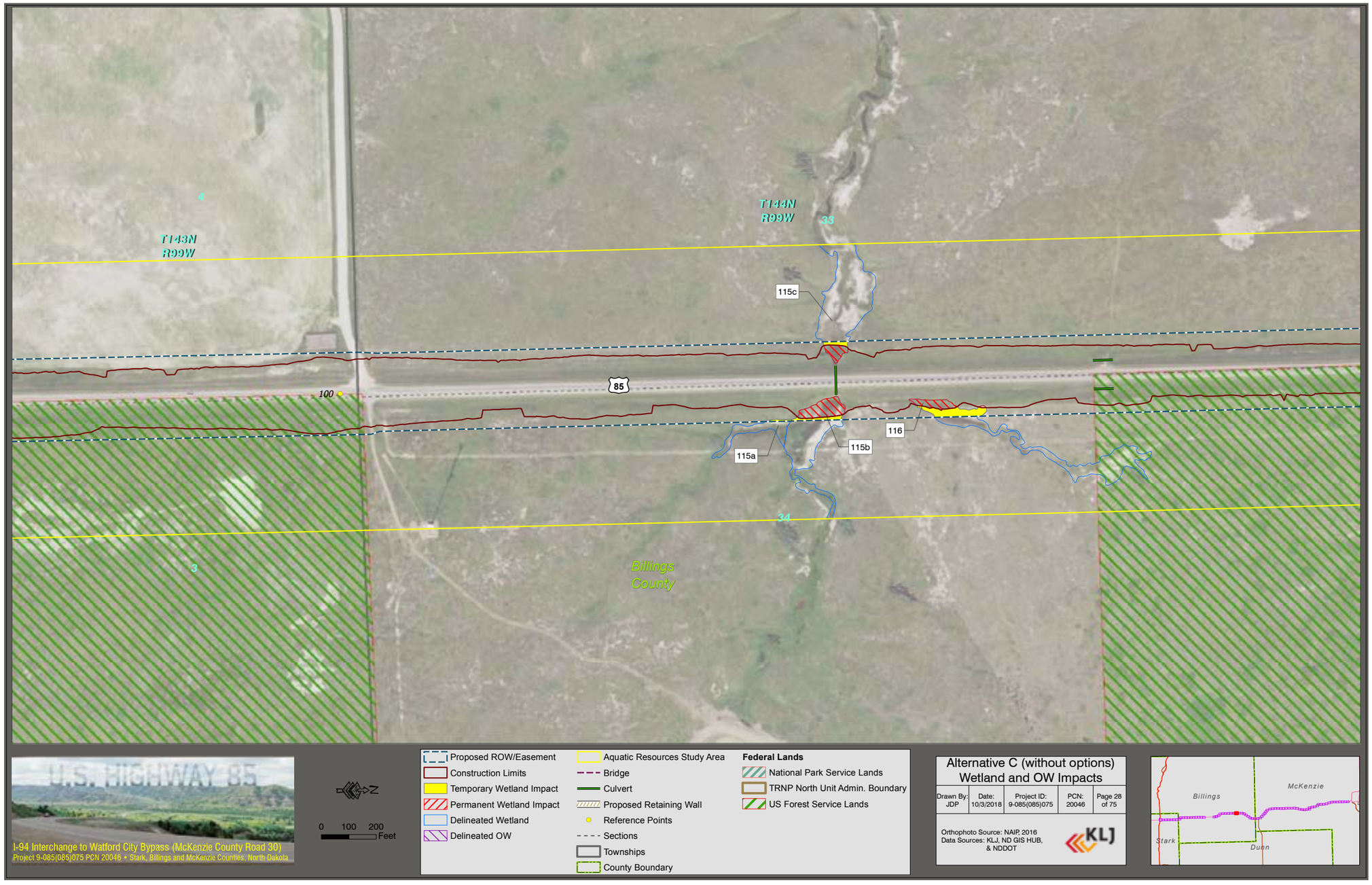
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

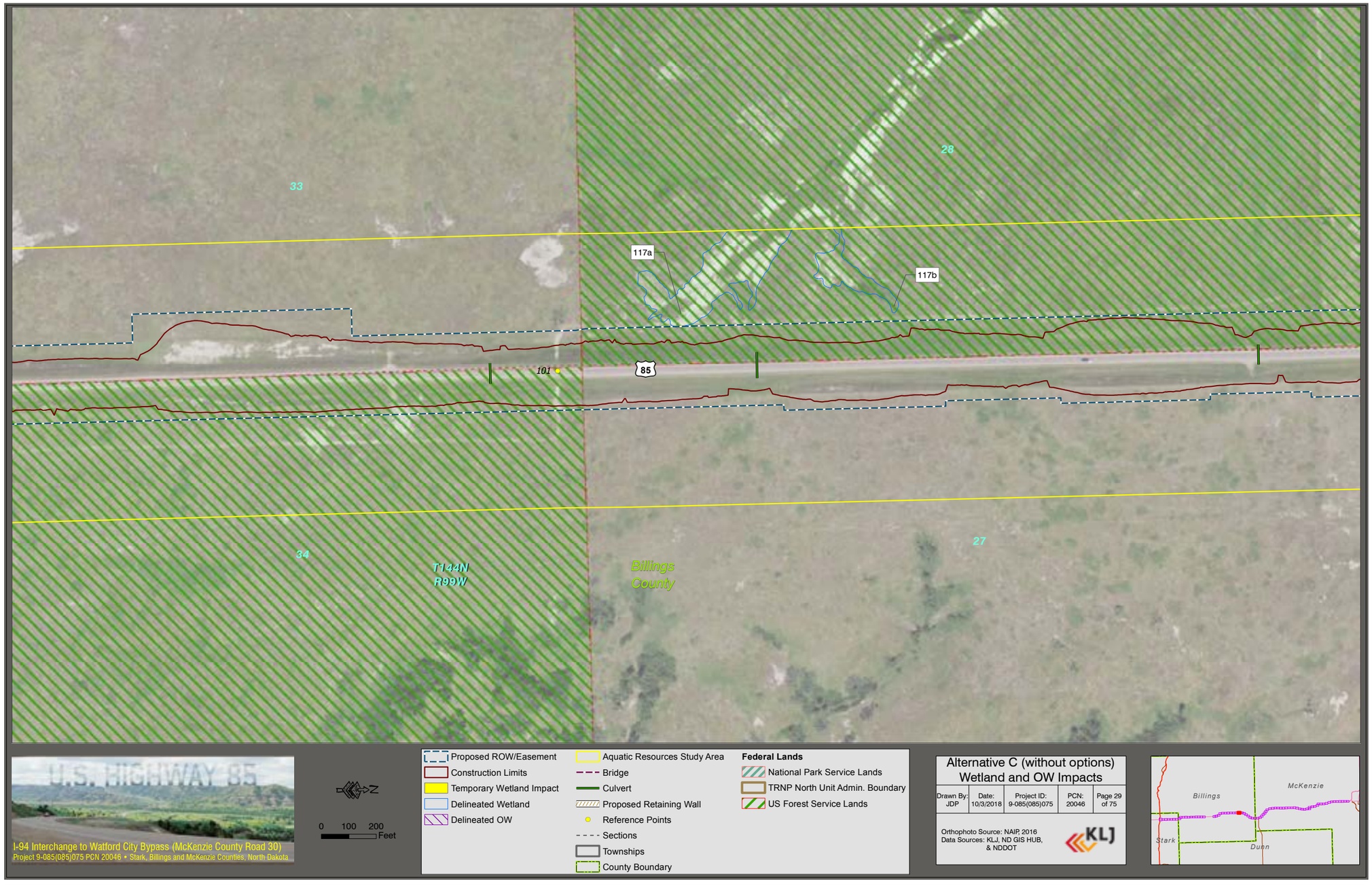
Alternative C (without options) Wetland and OW Impacts

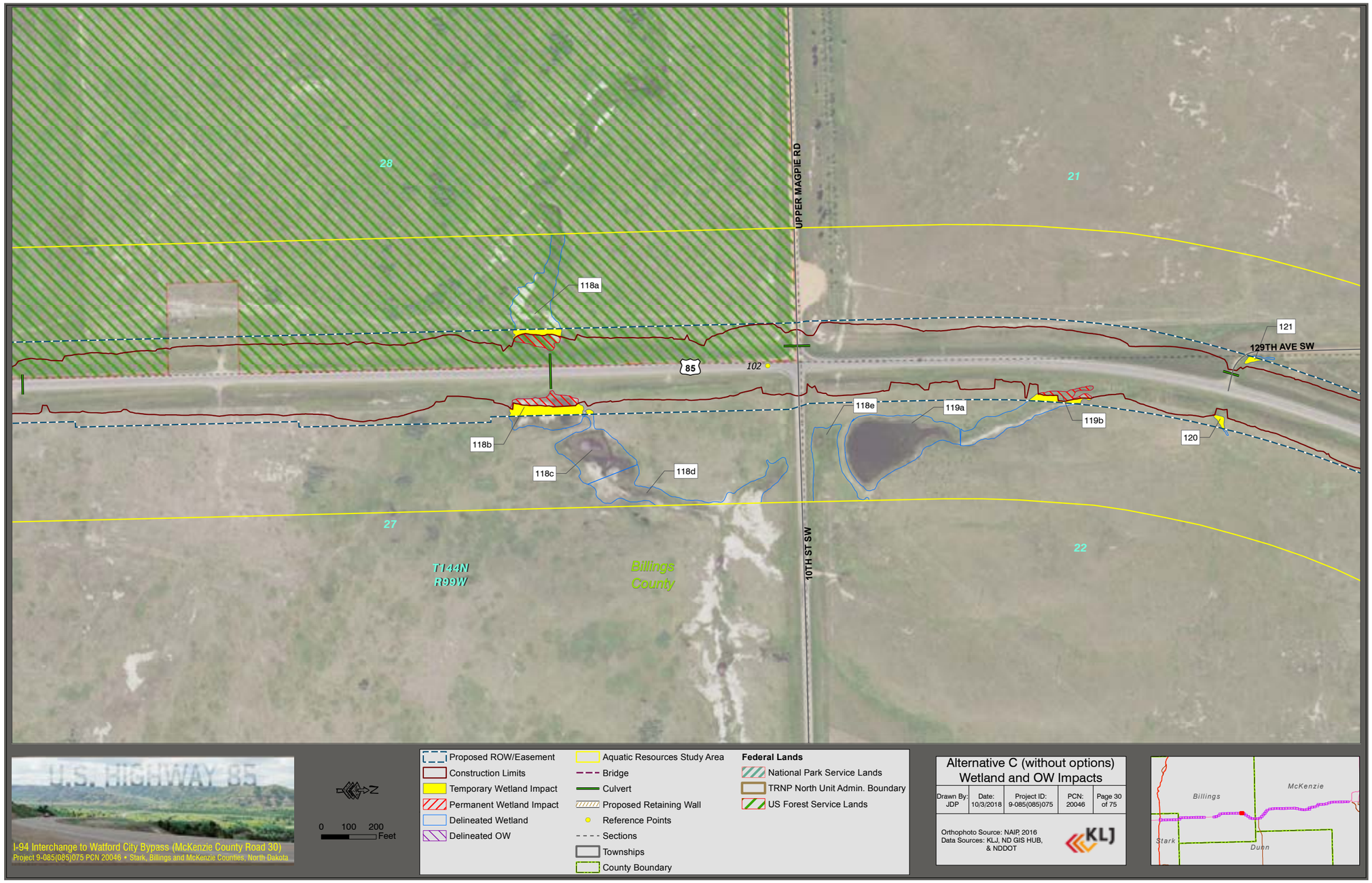
Drawn By:	Date:	Project ID:	PCN:	Page 26 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT


T143N
R99W
112
111
114a
85
99
109
110
113
114b
Billings
County
4
9
3
10
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 27 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


4
T143N
R99W
T144N
R99W
33
115c
85
100
115a
115b
116
34
3
Billings
County
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 28 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


33
28
117a
117b
101
85
34
T144N
R99W
Billings
County
27
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 29 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



0 100 200 Feet

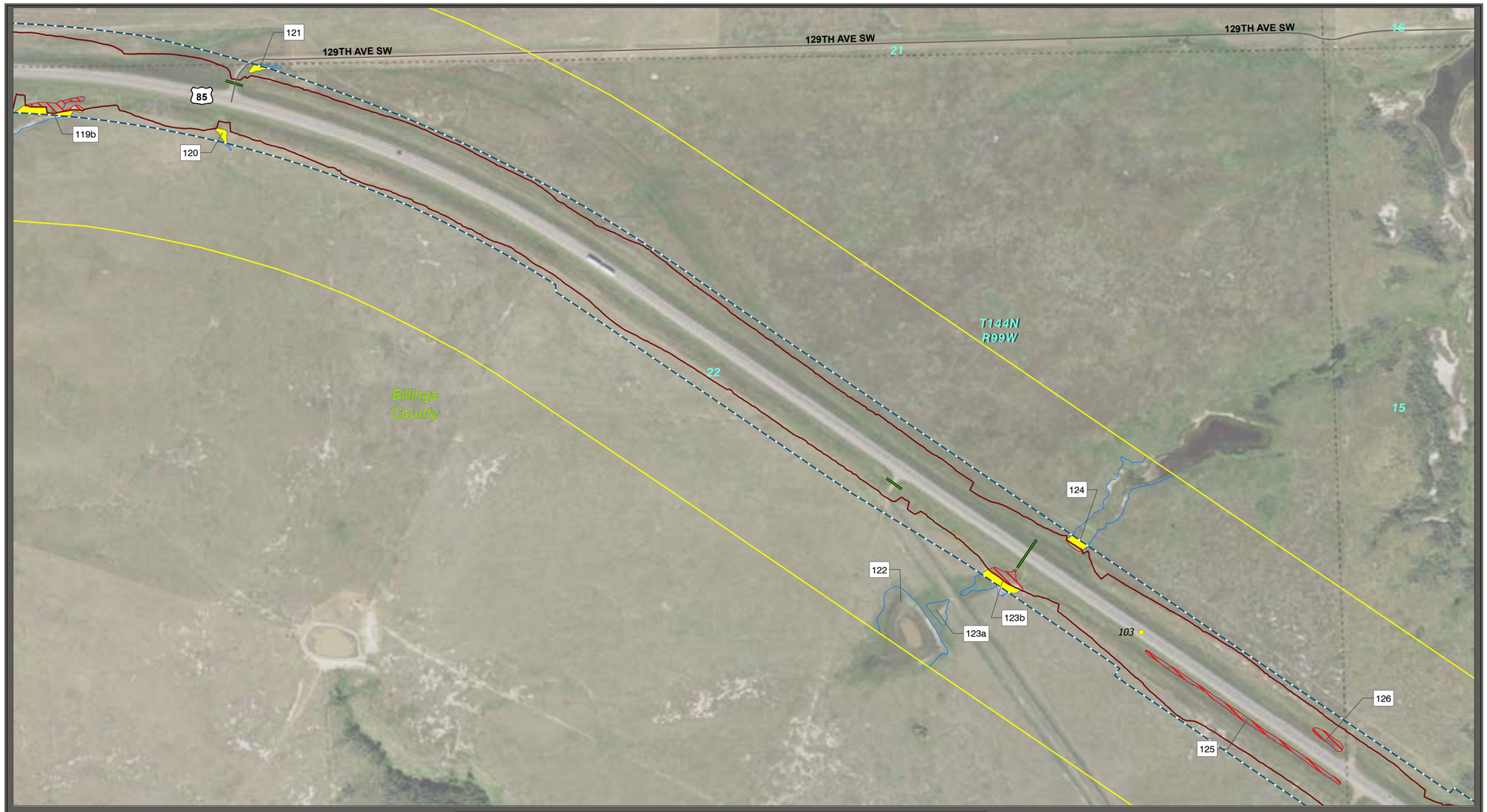
- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

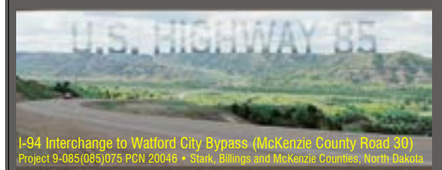
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative C (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 30 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

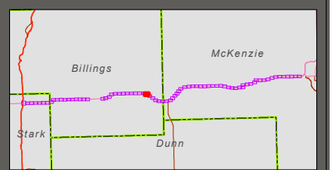
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

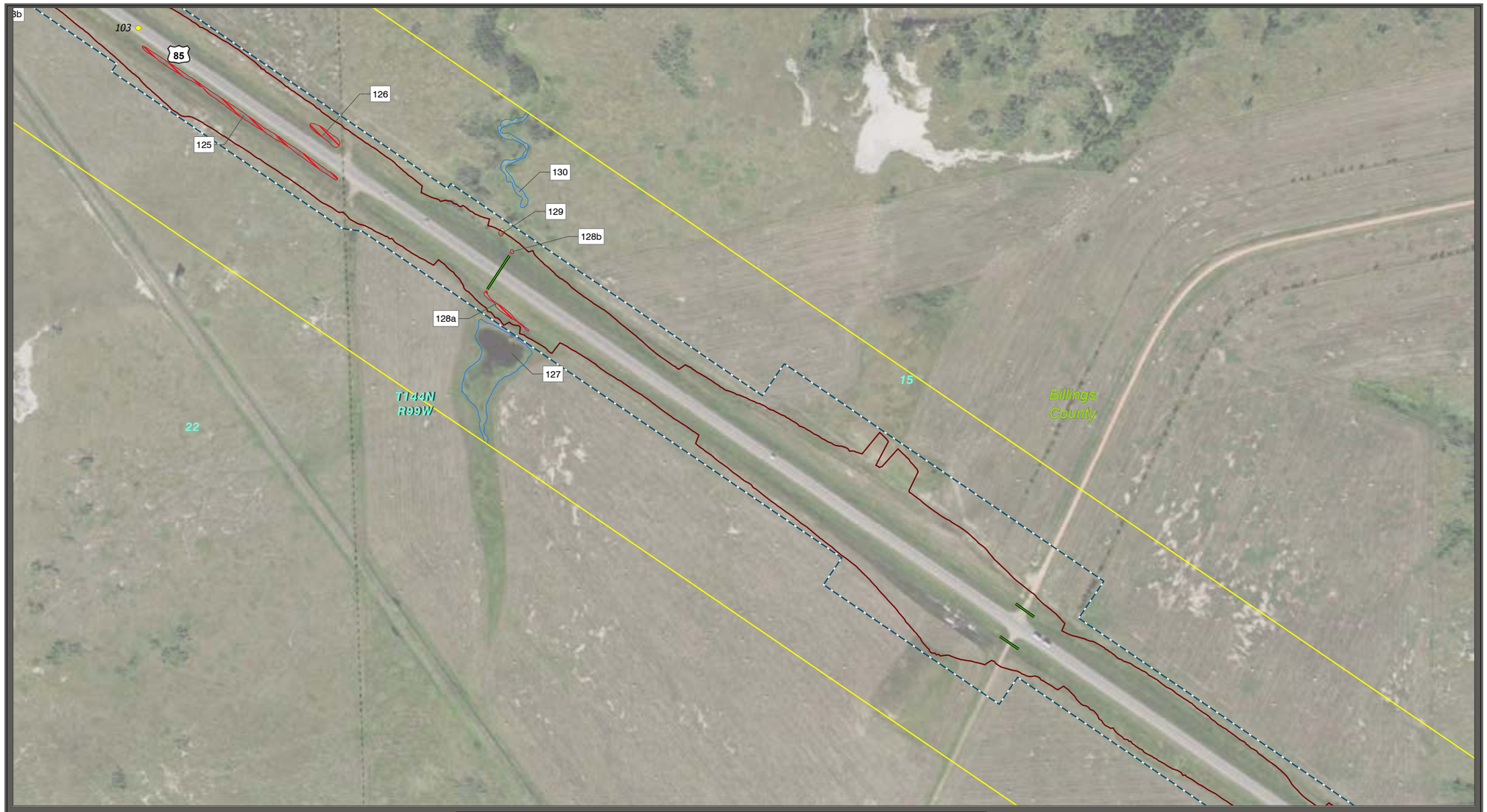
Alternative C (without options) Wetland and OW Impacts

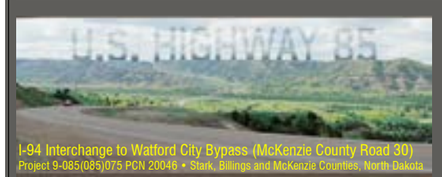
Drawn By:	Date:	Project ID:	PCN:	Page 31 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ







N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

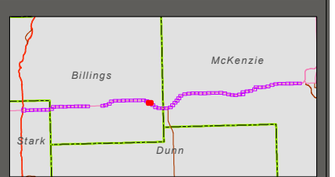
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

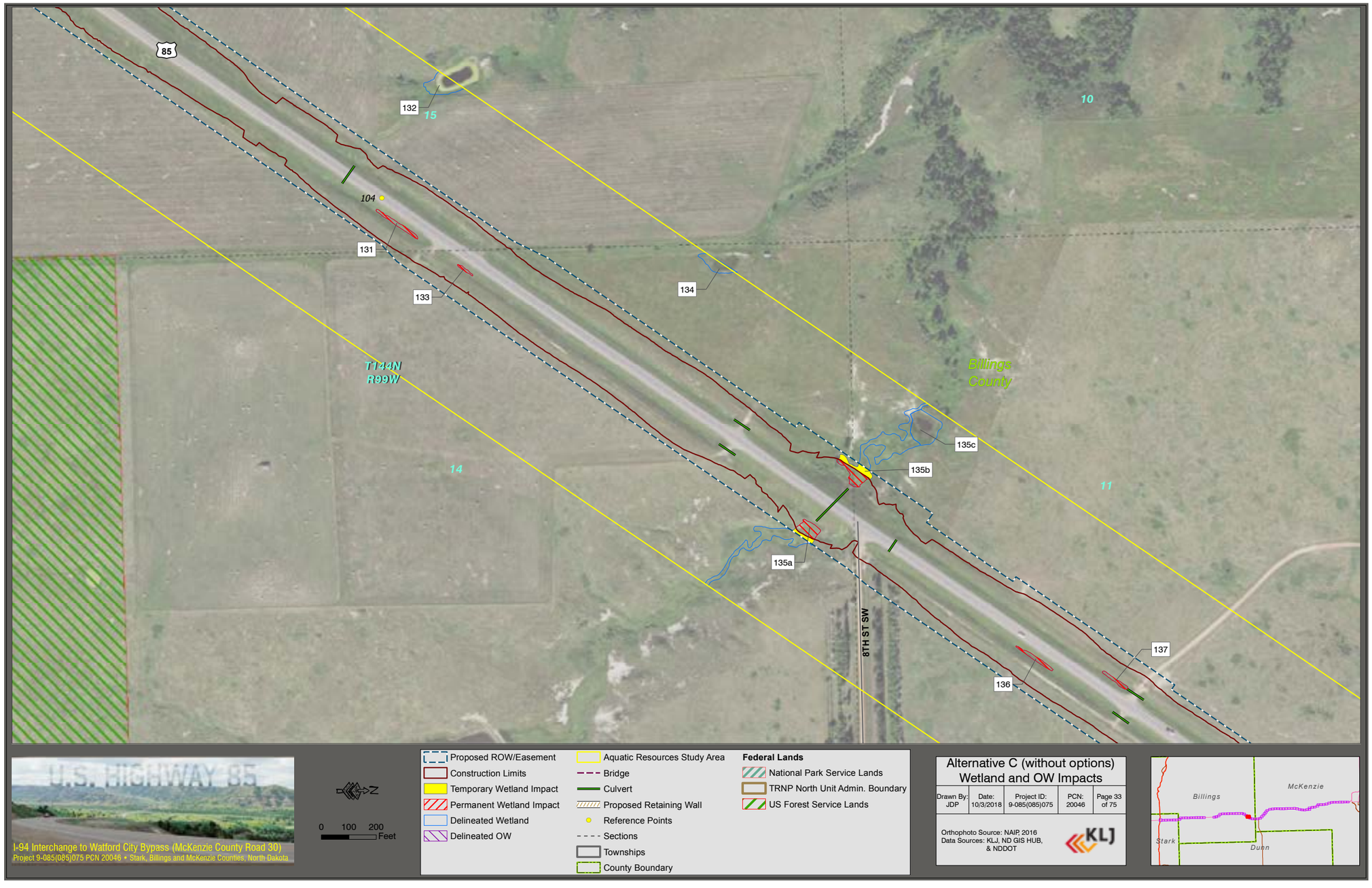
Alternative C (without options)
Wetland and OW Impacts

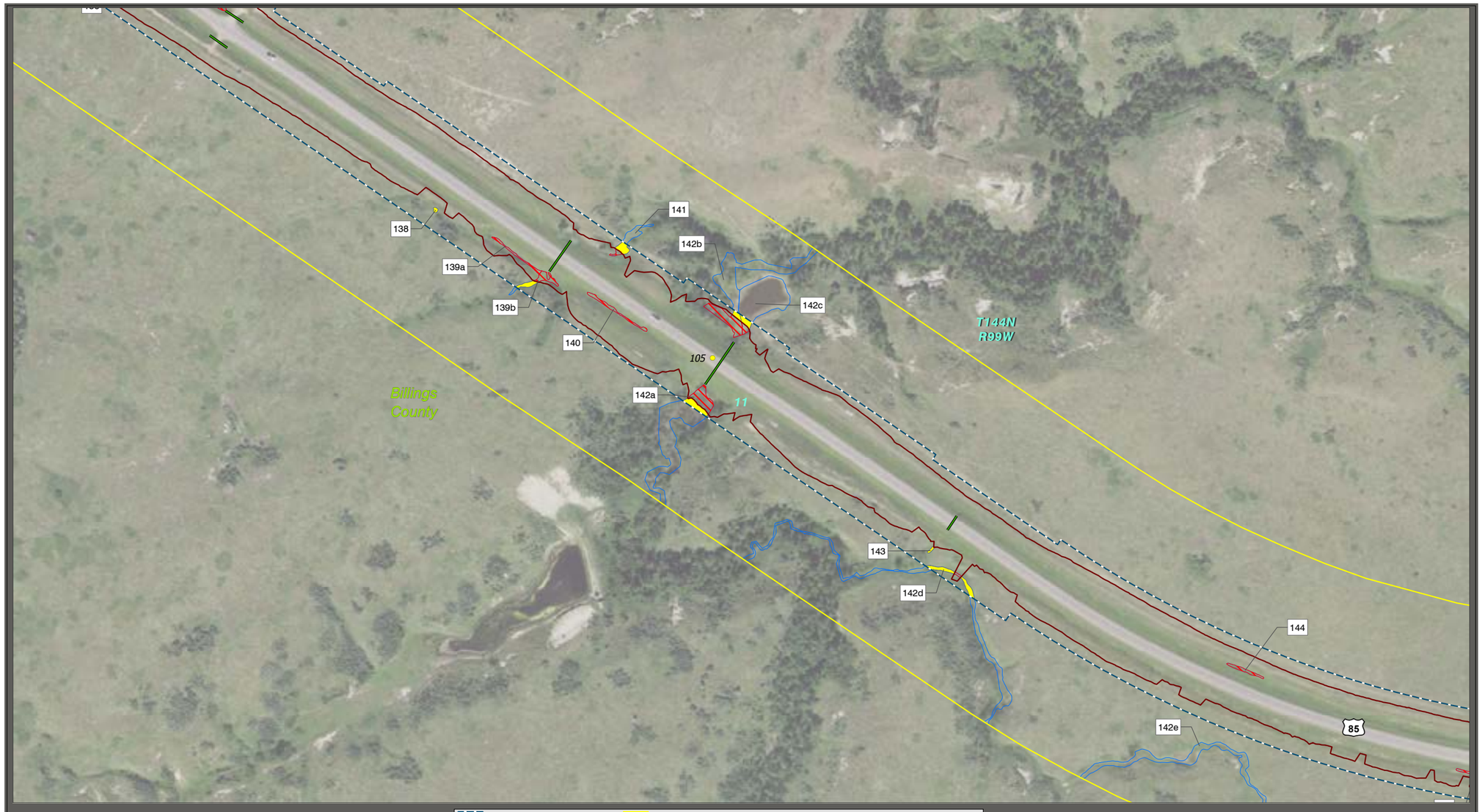
Drawn By:	Date:	Project ID:	PCN:	Page 32 of 75
JDP	10/3/2018	9-085(085)075	20046	

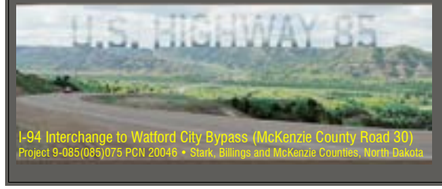
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ




85
132
15
104
131
133
134
10
T144N
R99W
Billings
County
135c
135b
14
11
135a
8TH ST SW
137
136
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 33 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

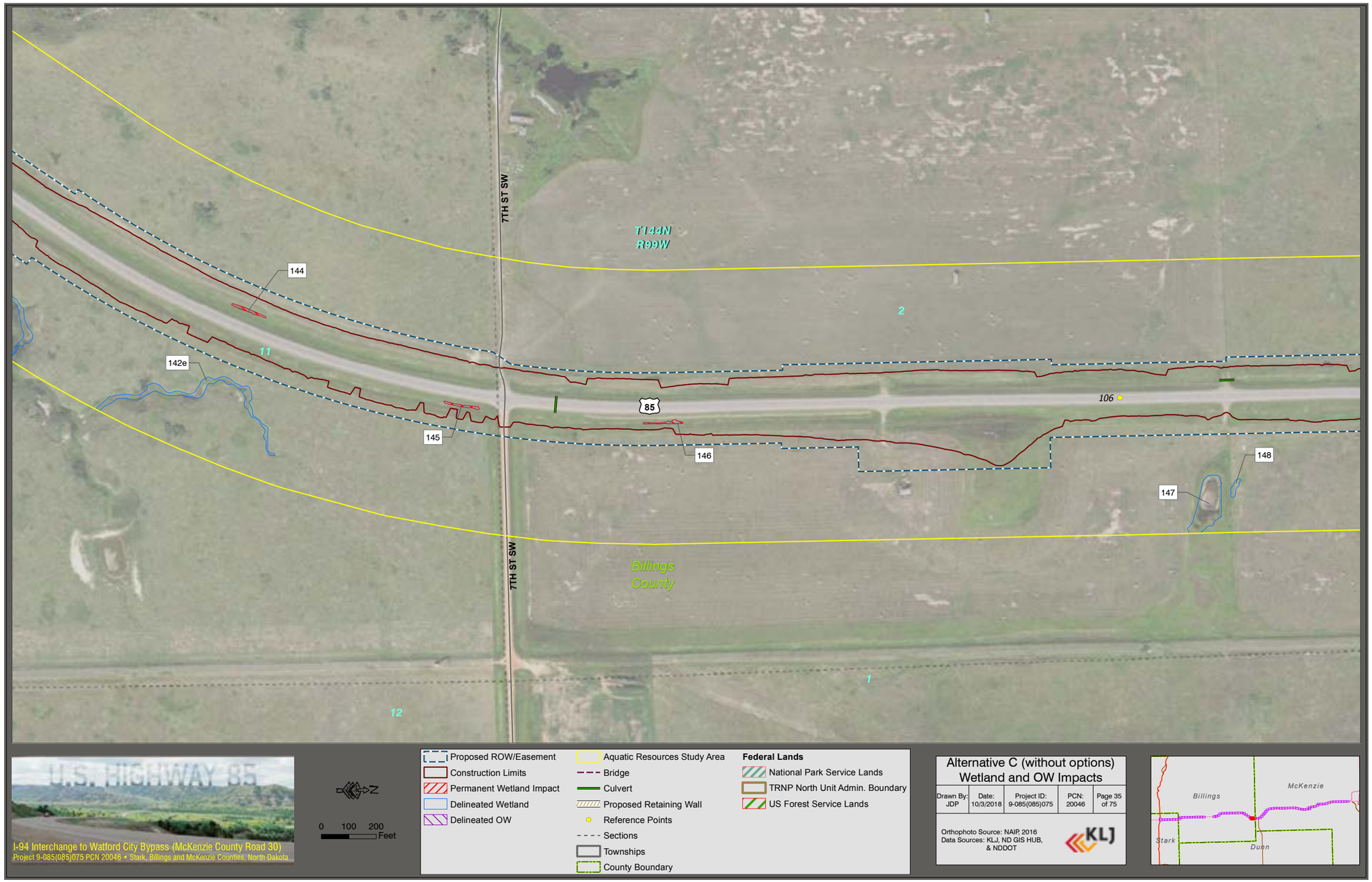
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative C (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 34 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

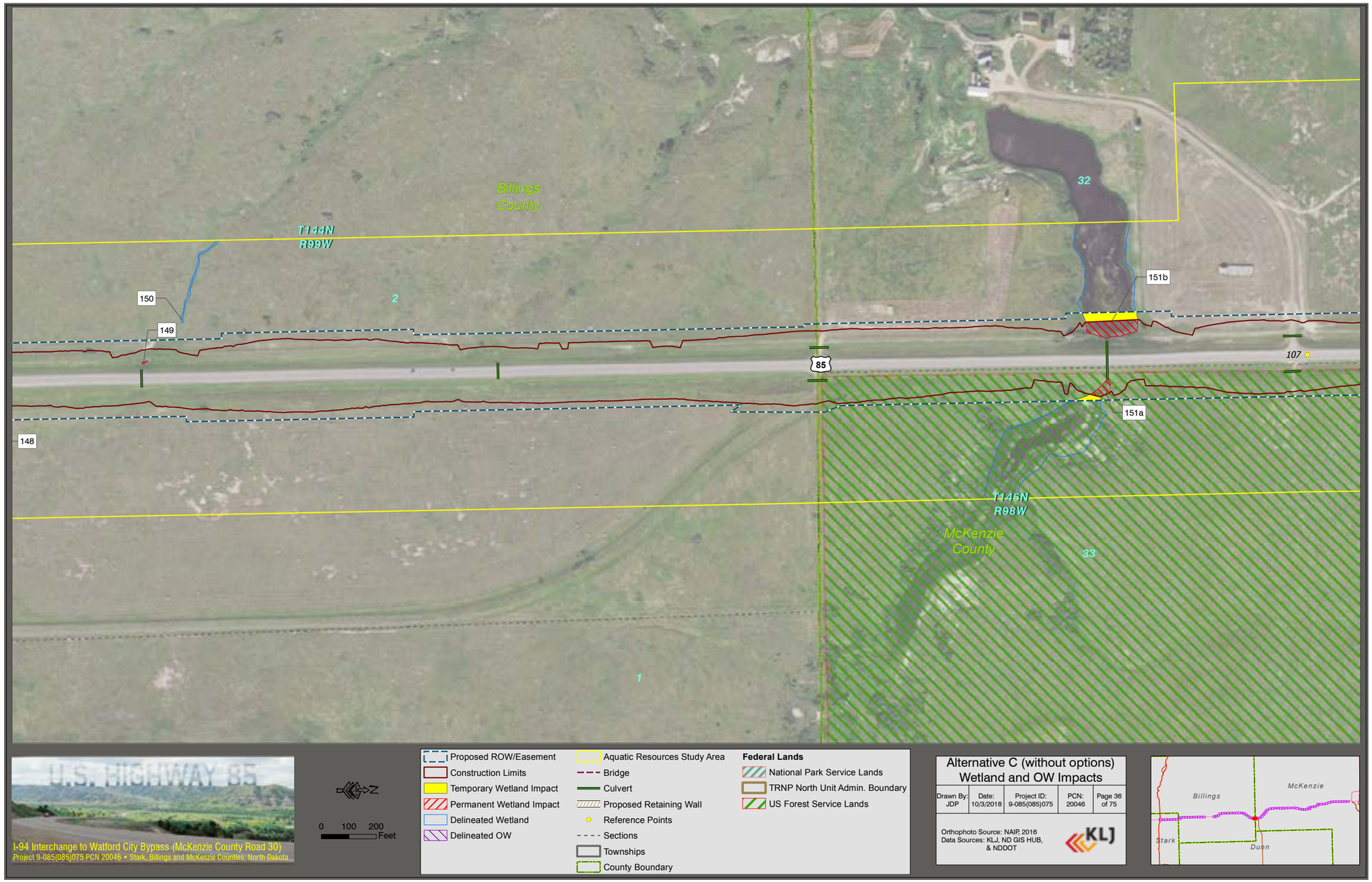
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

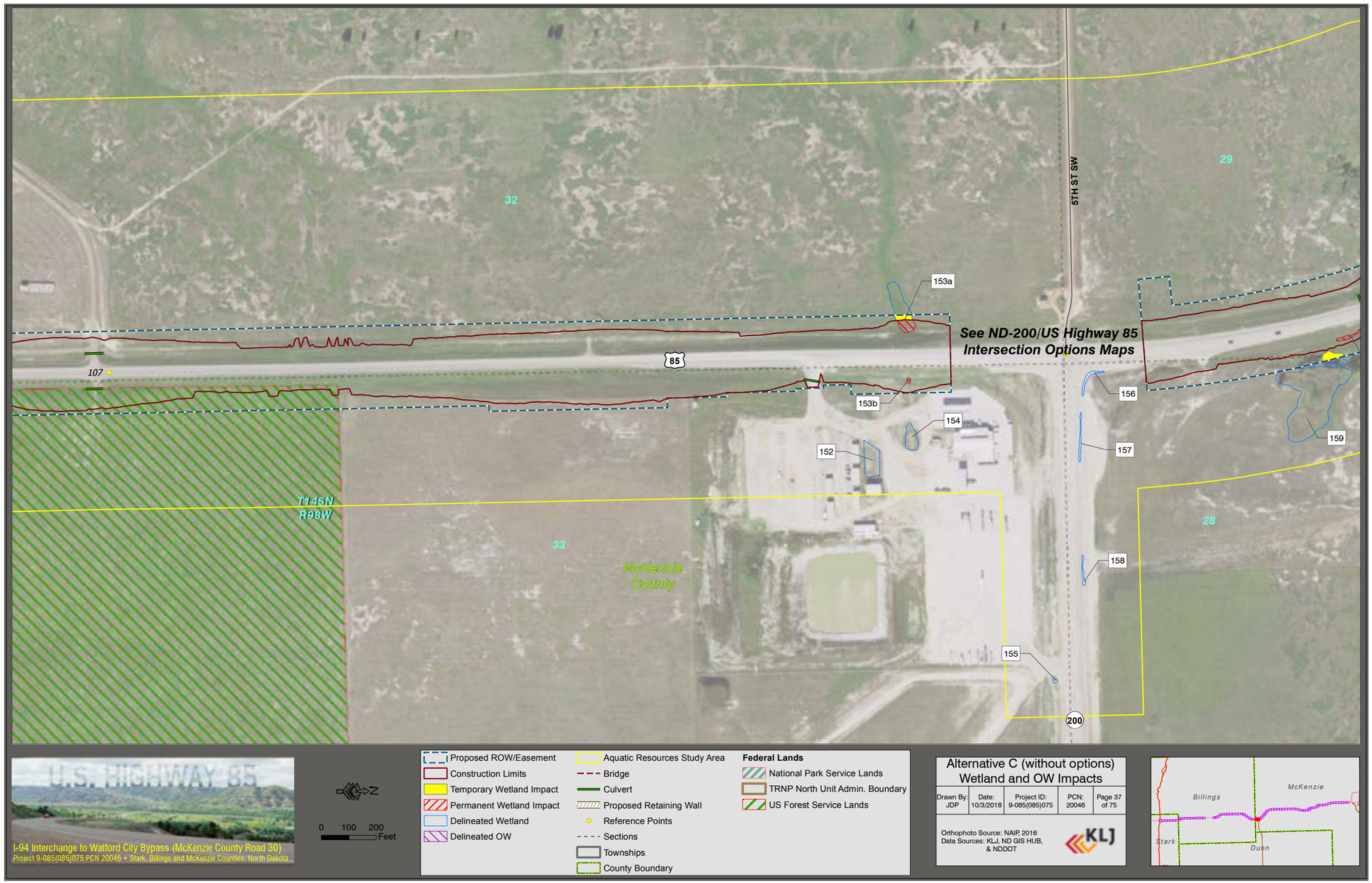
Alternative C (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 35 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


Billings
County
T144N
R99W
2
32
150
149
148
85
151b
151a
107
T145N
R98W
McKenzie
County
33
1
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 36 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

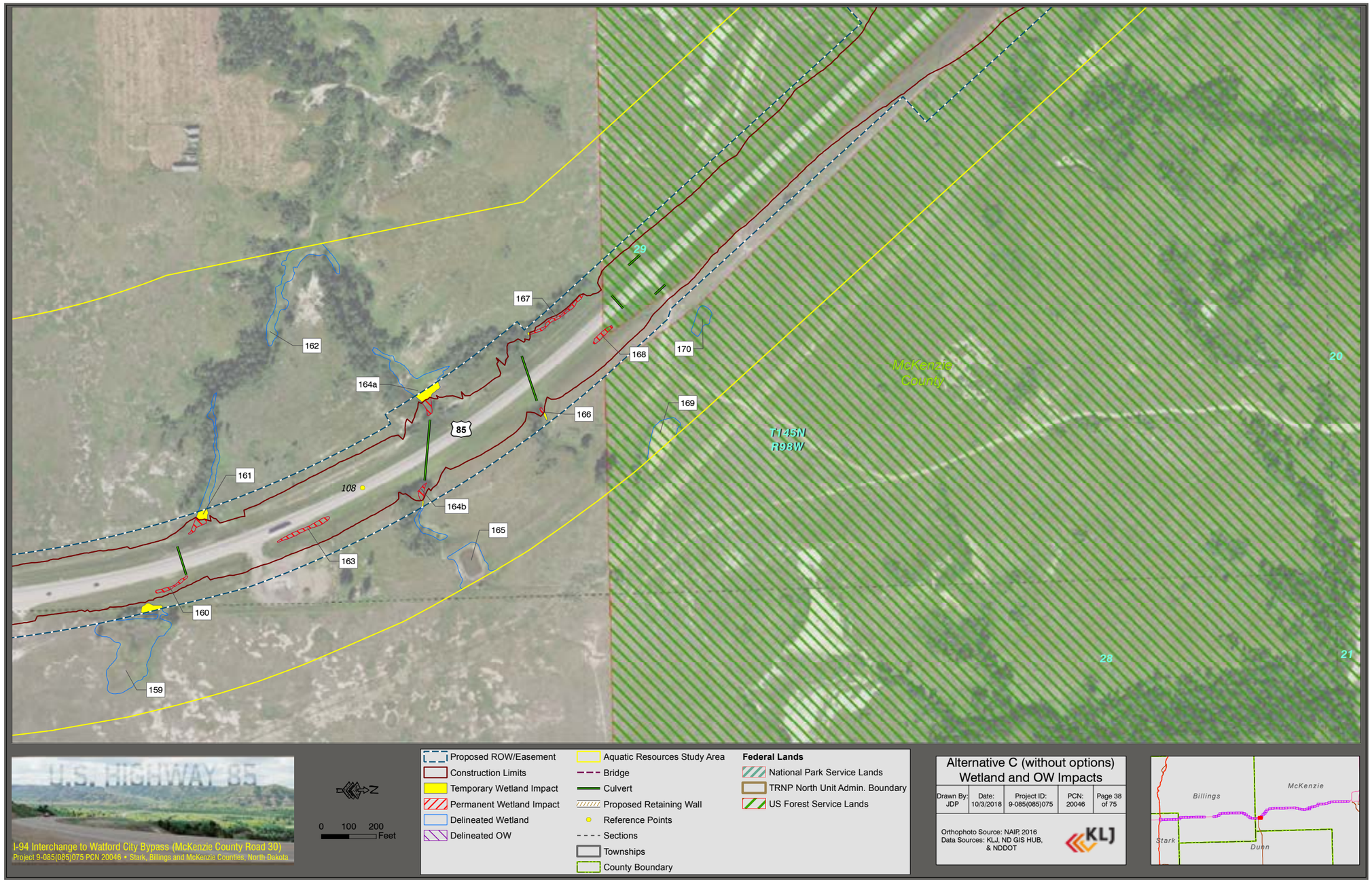
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

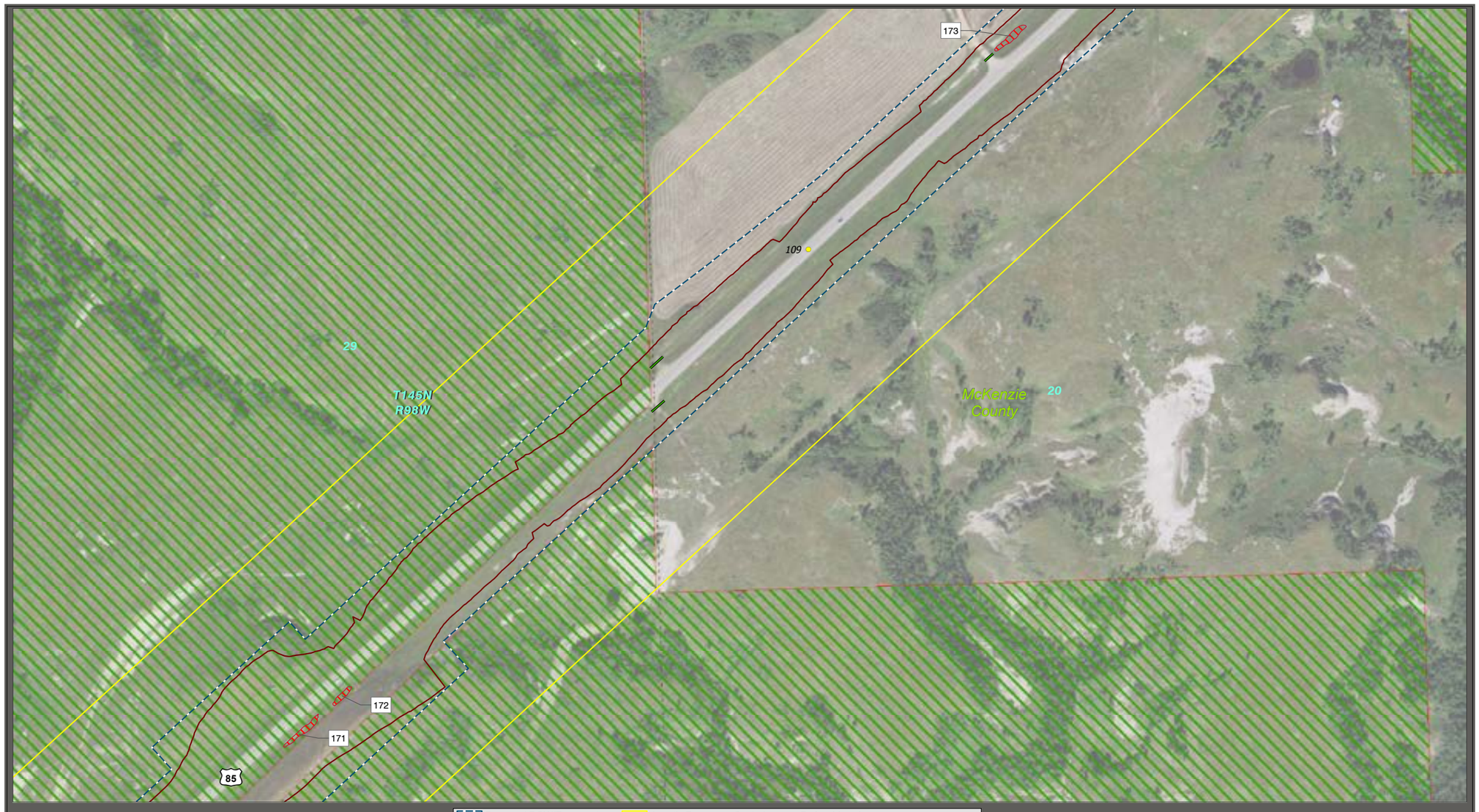
Alternative C (without options) Wetland and OW Impacts

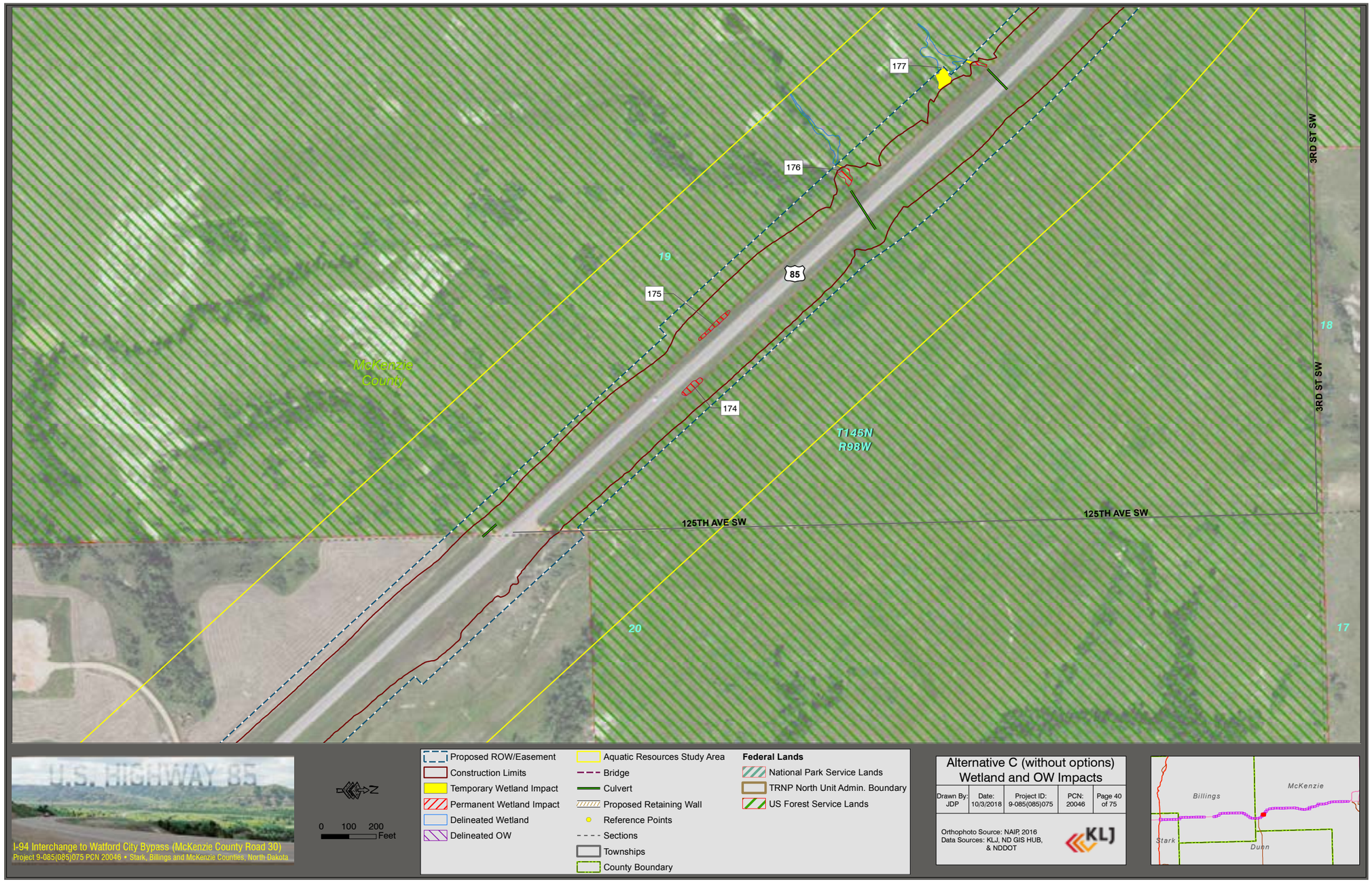
Drawn By:	Date:	Project ID:	PCN:	Page 37 of 75
JDP	10/3/2018	9-085(085)075	20046	

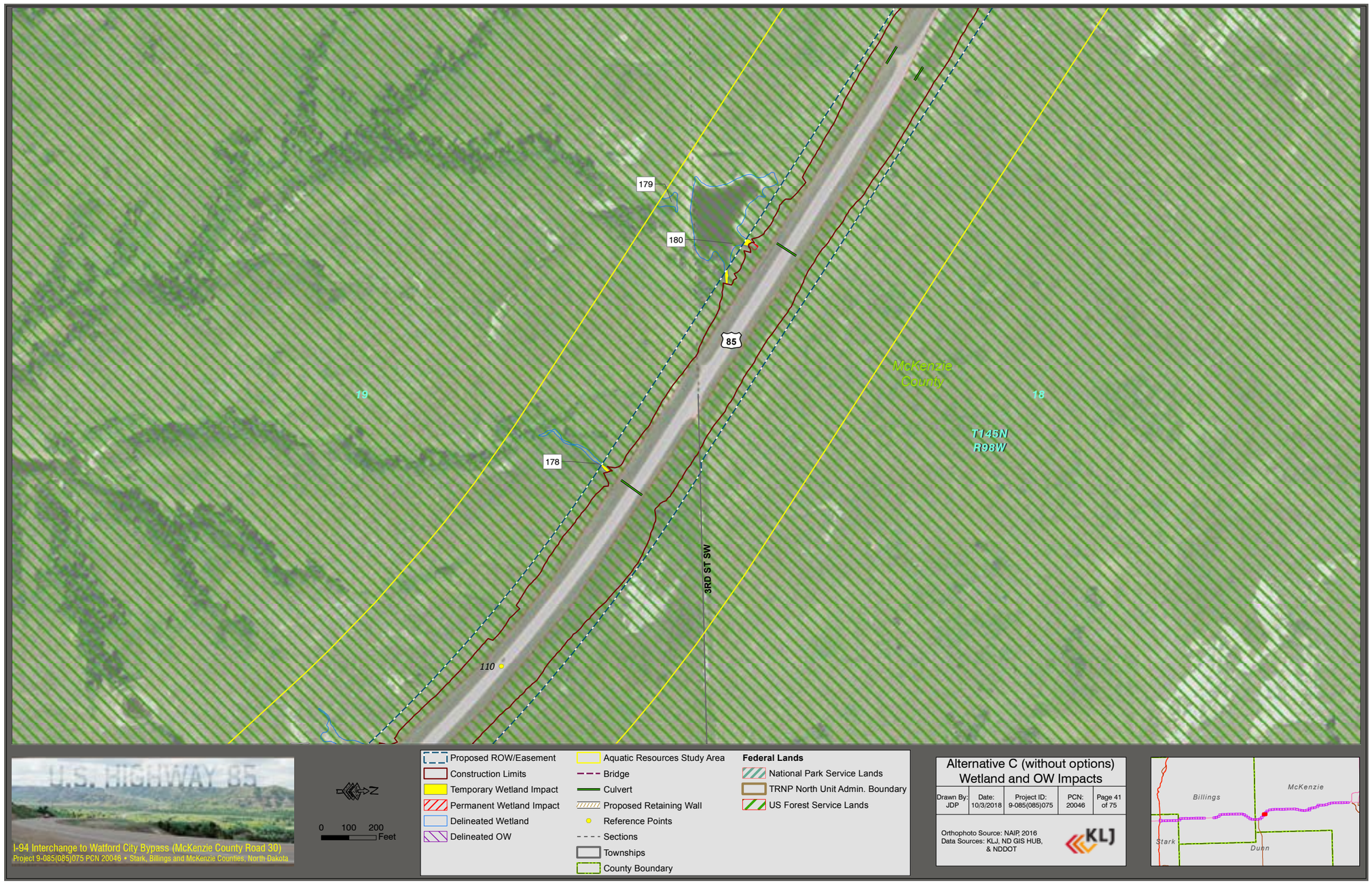
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

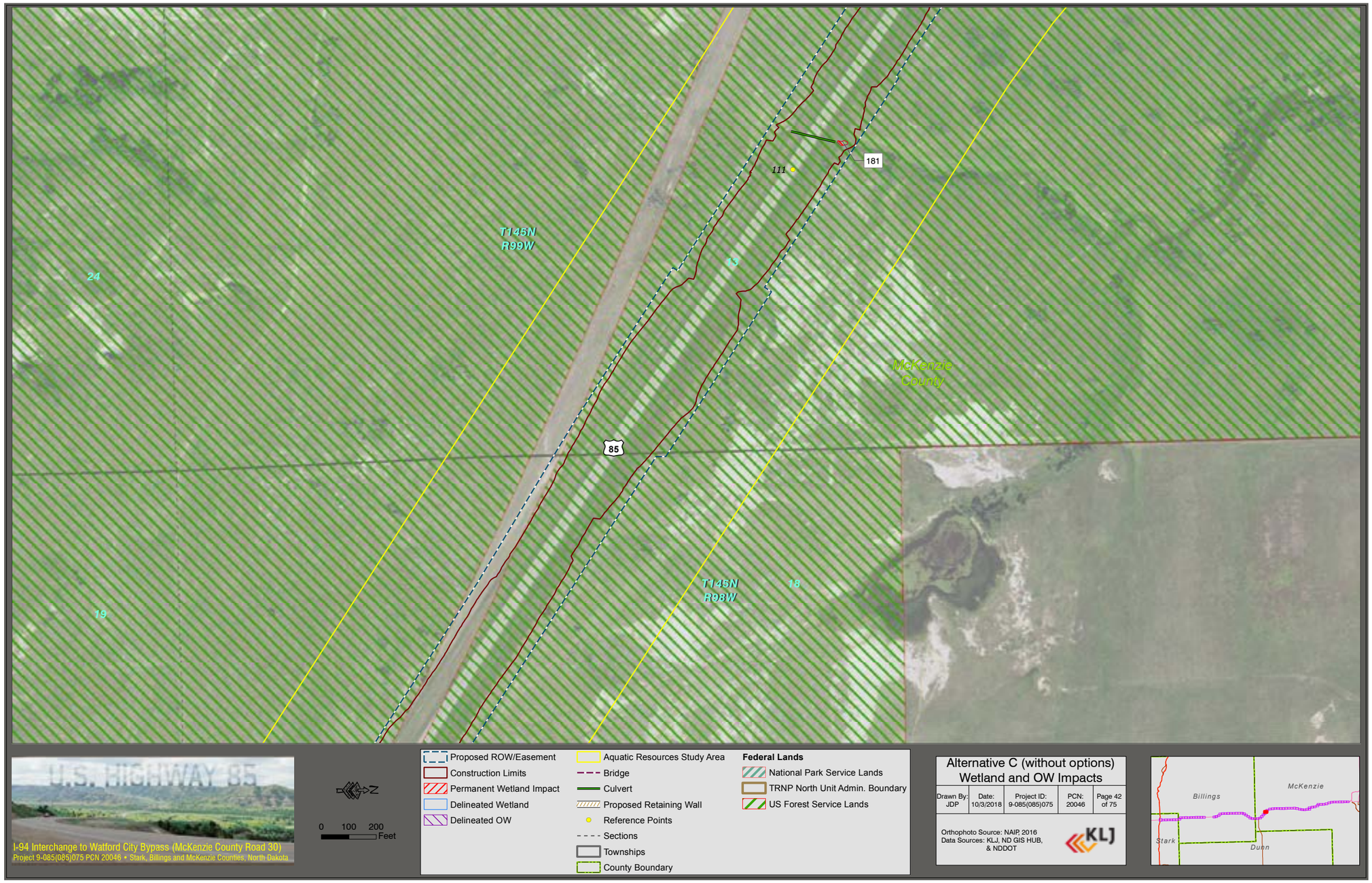
KLJ

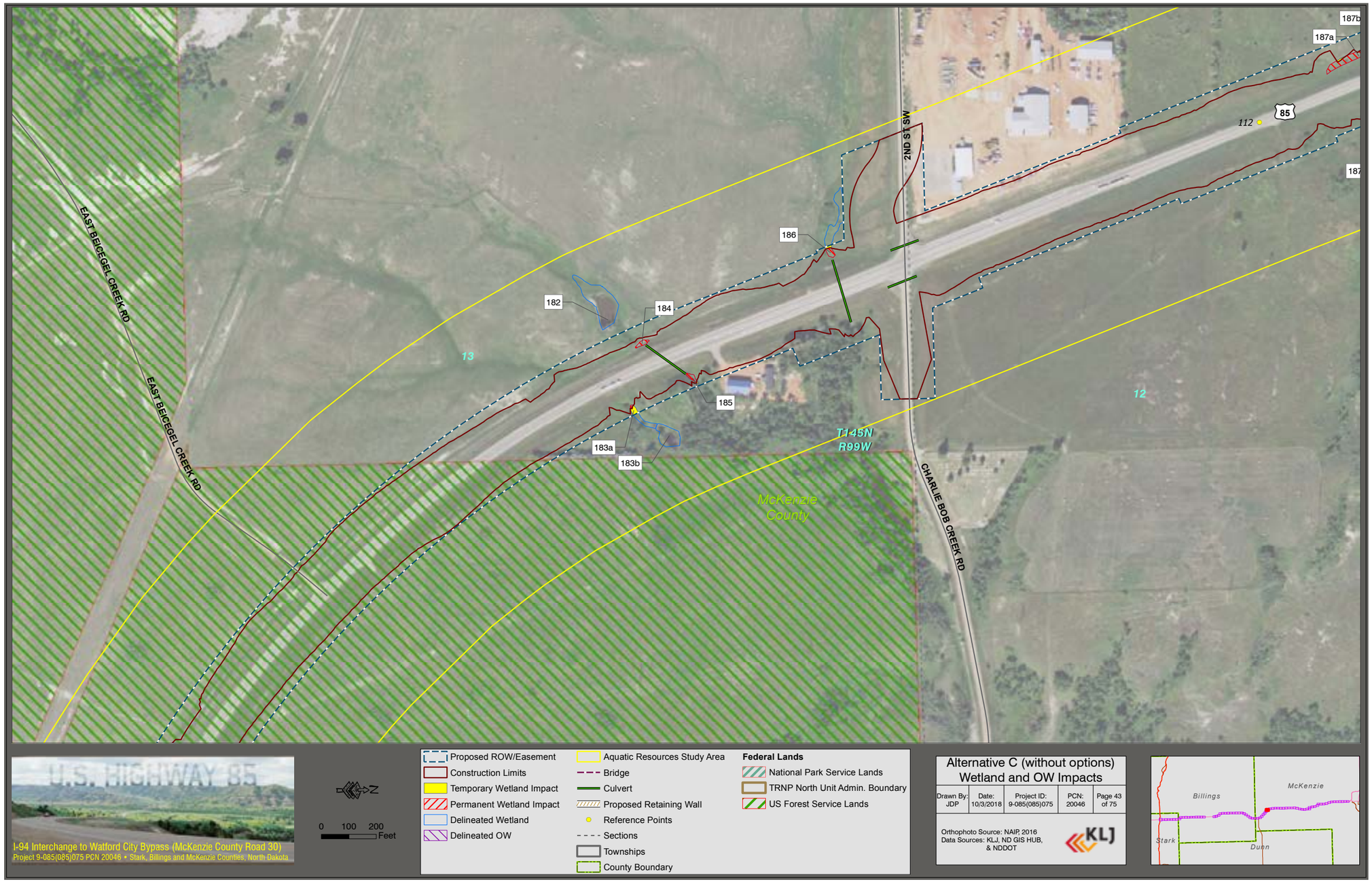

29
20
21
28
McKenzie County
T145N
R98W
85
108
159
160
161
162
163
164a
164b
165
166
167
168
169
170
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200 Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 38 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn

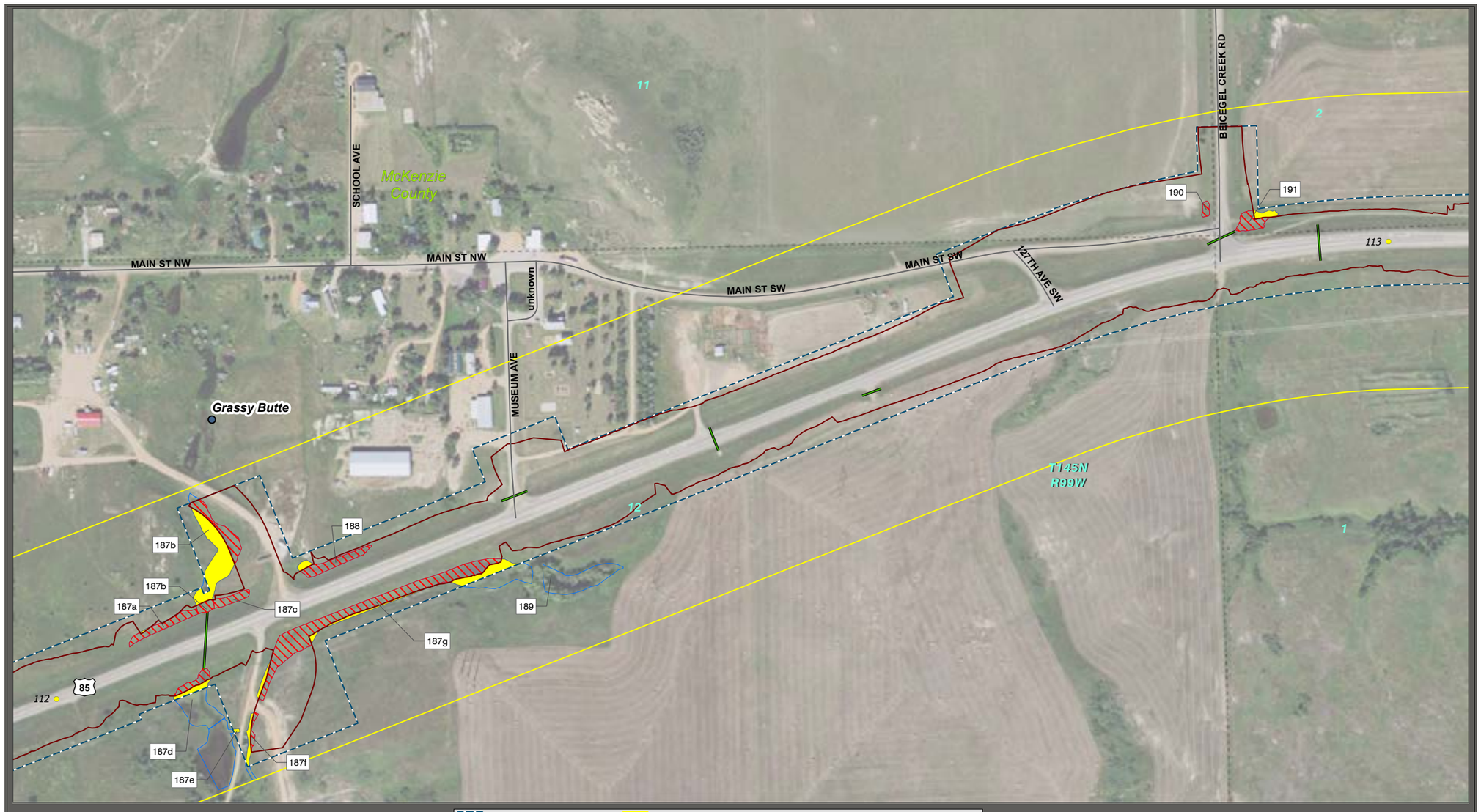

173
109
29
T145N
R98W
McKenzie
County
20
172
171
85
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 39 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn

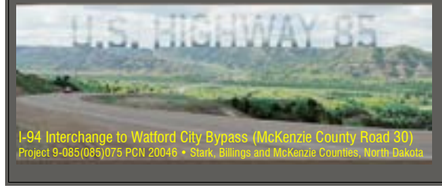

177
176
175
174
19
18
17
20
85
McKenzie County
T145N
R98W
3RD ST SW
3RD ST SW
125TH AVE SW
125TH AVE SW
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
0 100 200 Feet
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 40 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


179
180
178
110
85
19
18
McKenzie County
T145N
R98W
3RD ST SW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 41 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


T145N
R99W
24
13
111
181
85
McKenzie
County
T145N
R98W
18
19
Proposed ROW/Easement
Construction Limits
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
0 100 200
Feet
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 42 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


187b
187a
187
112
85
2ND ST SW
186
182
184
185
183a
183b
13
12
T145N
R99W
McKenzie
County
EAST BEICEGEL CREEK RD
CHARLIE BOB CREEK RD
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 43 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

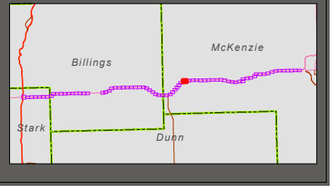
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

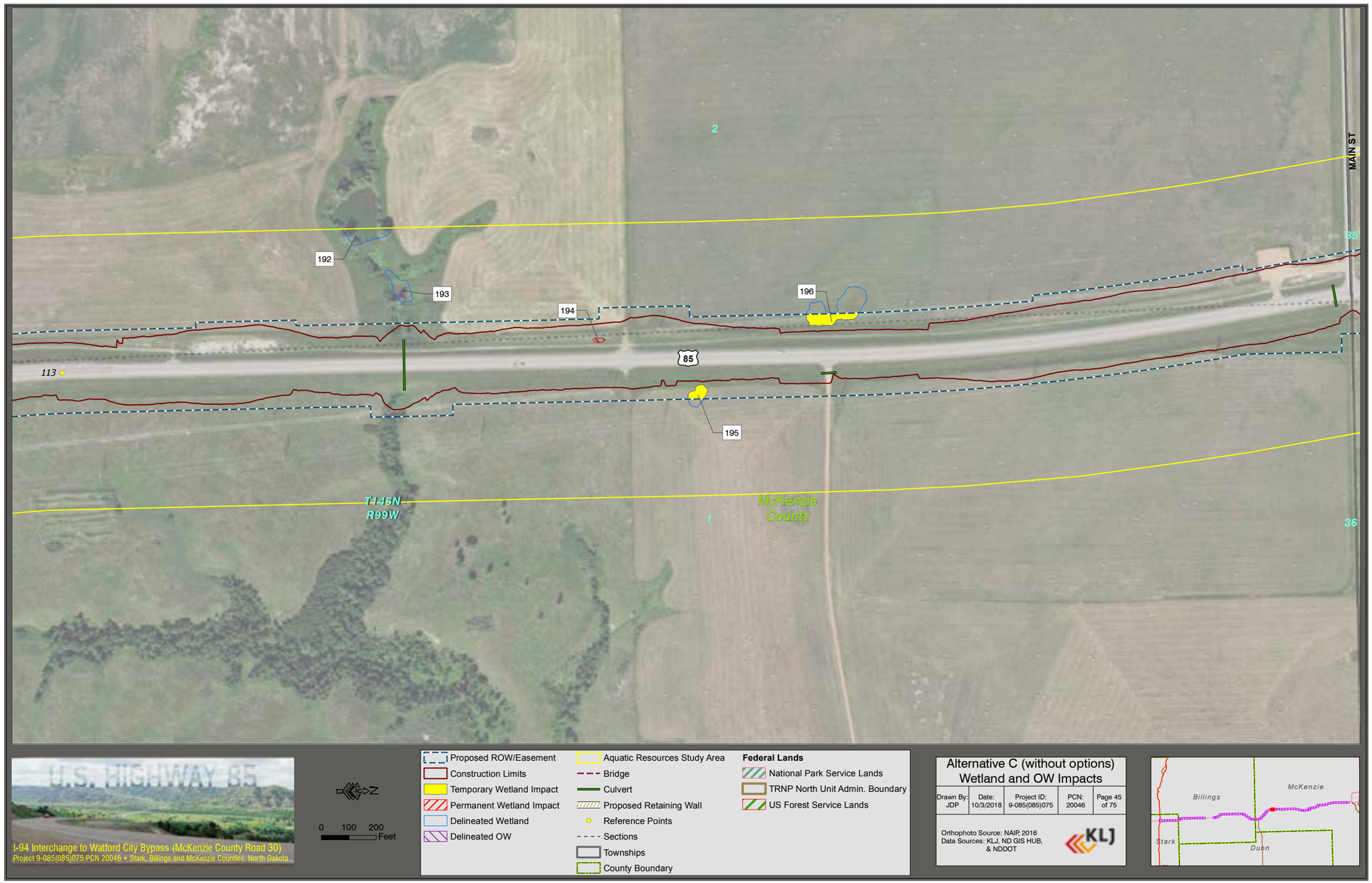
Alternative C (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 44 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

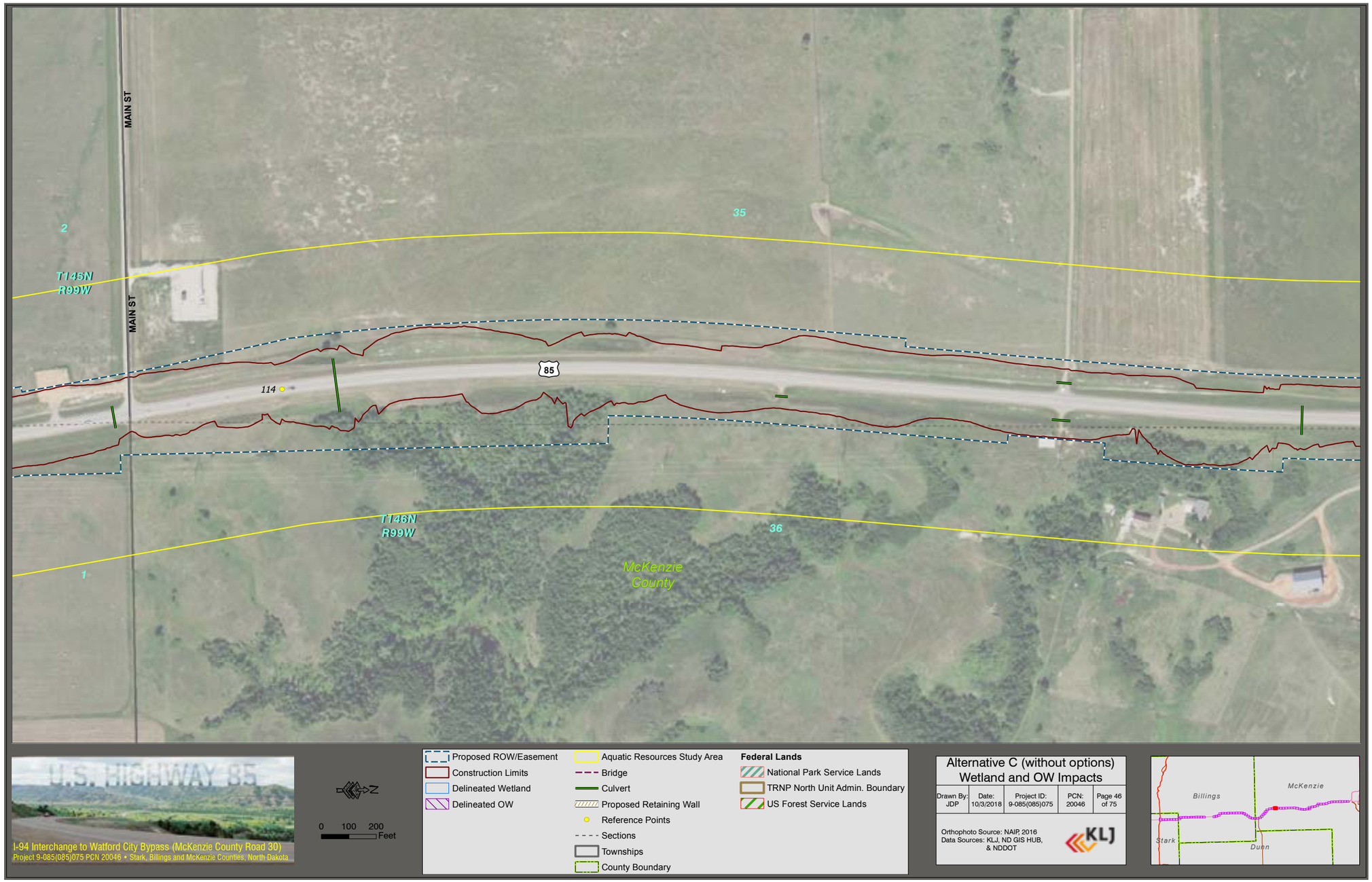
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative C (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 45 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

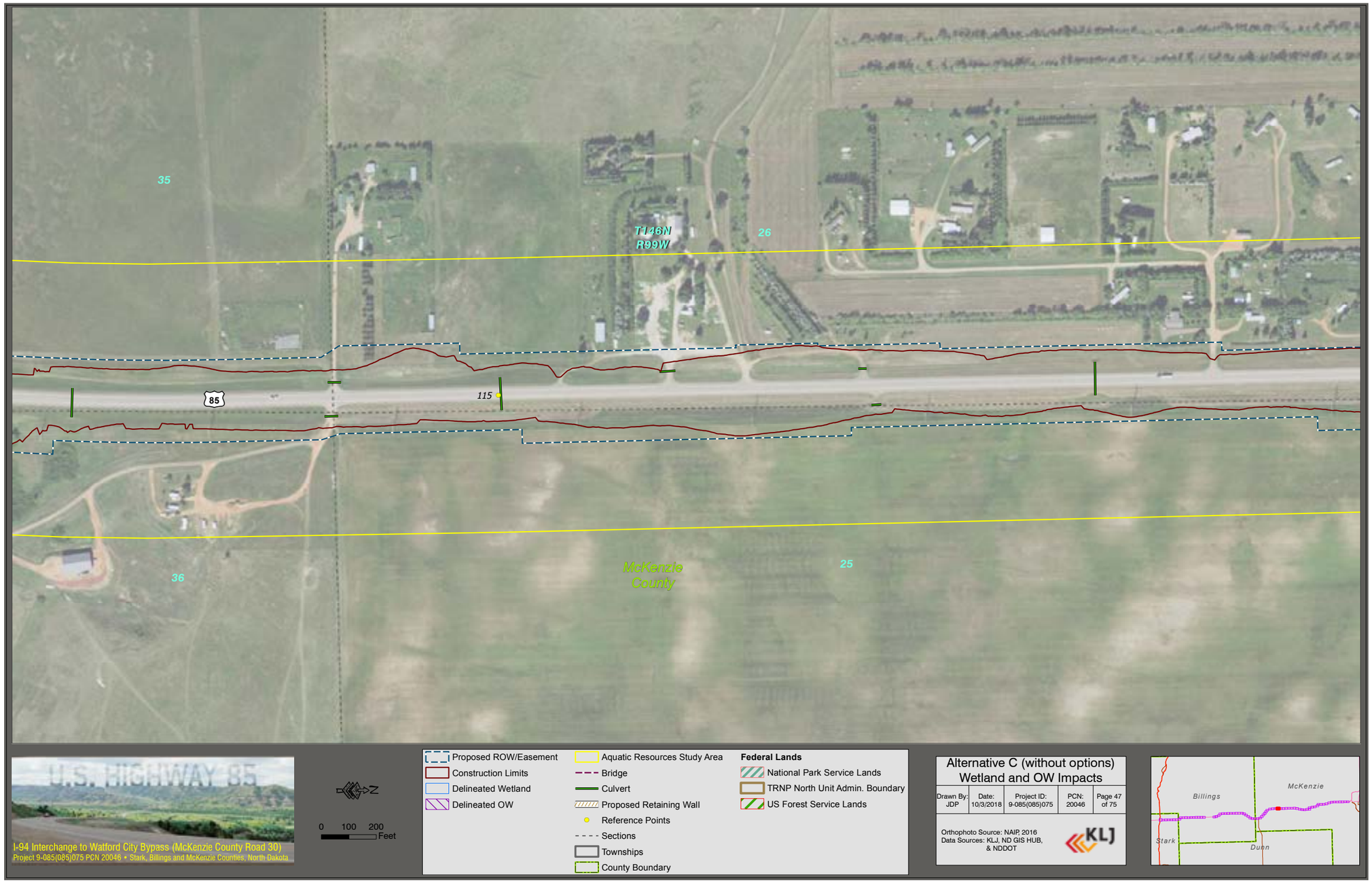
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative C (without options)
Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 46 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

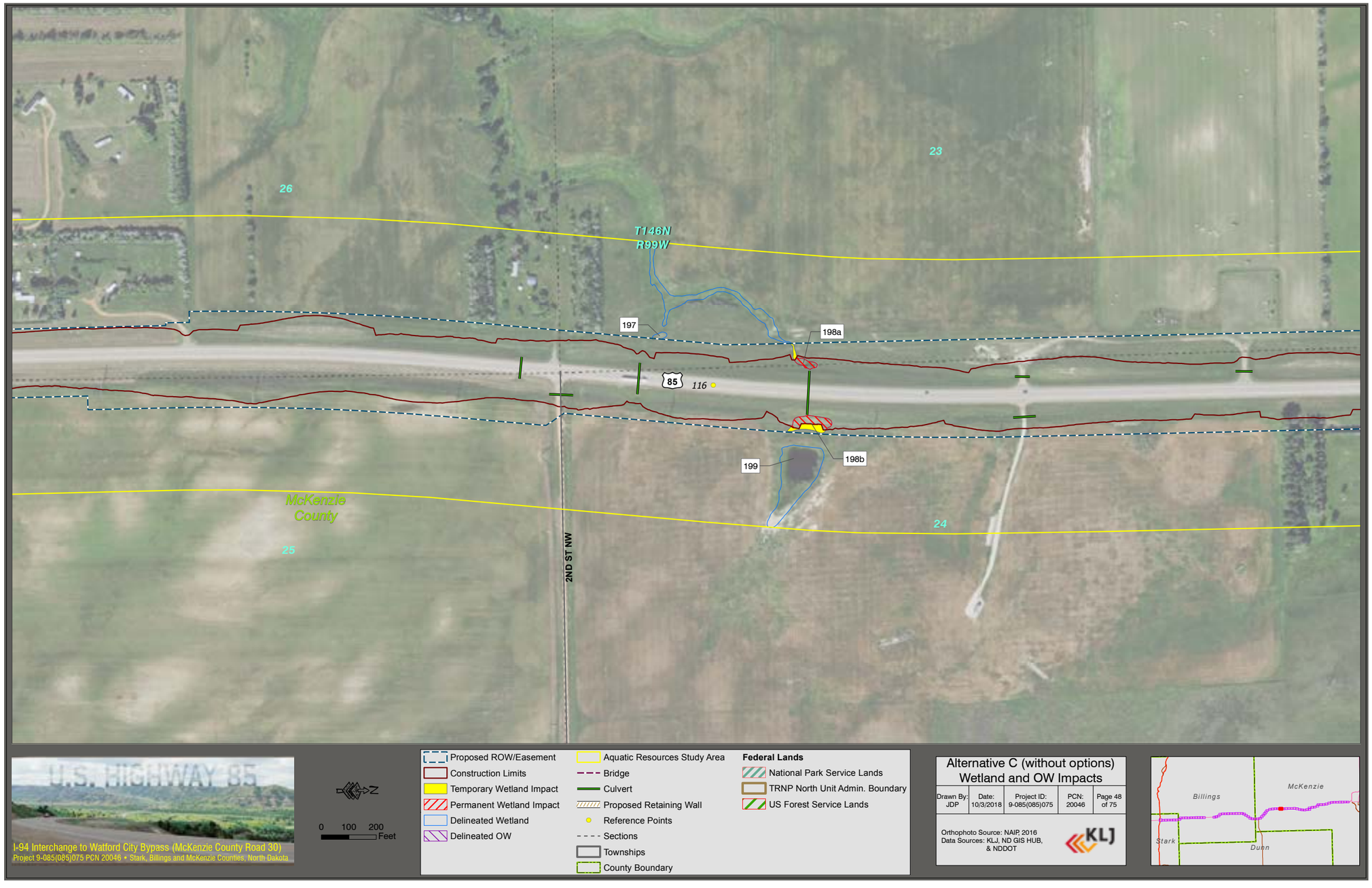
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

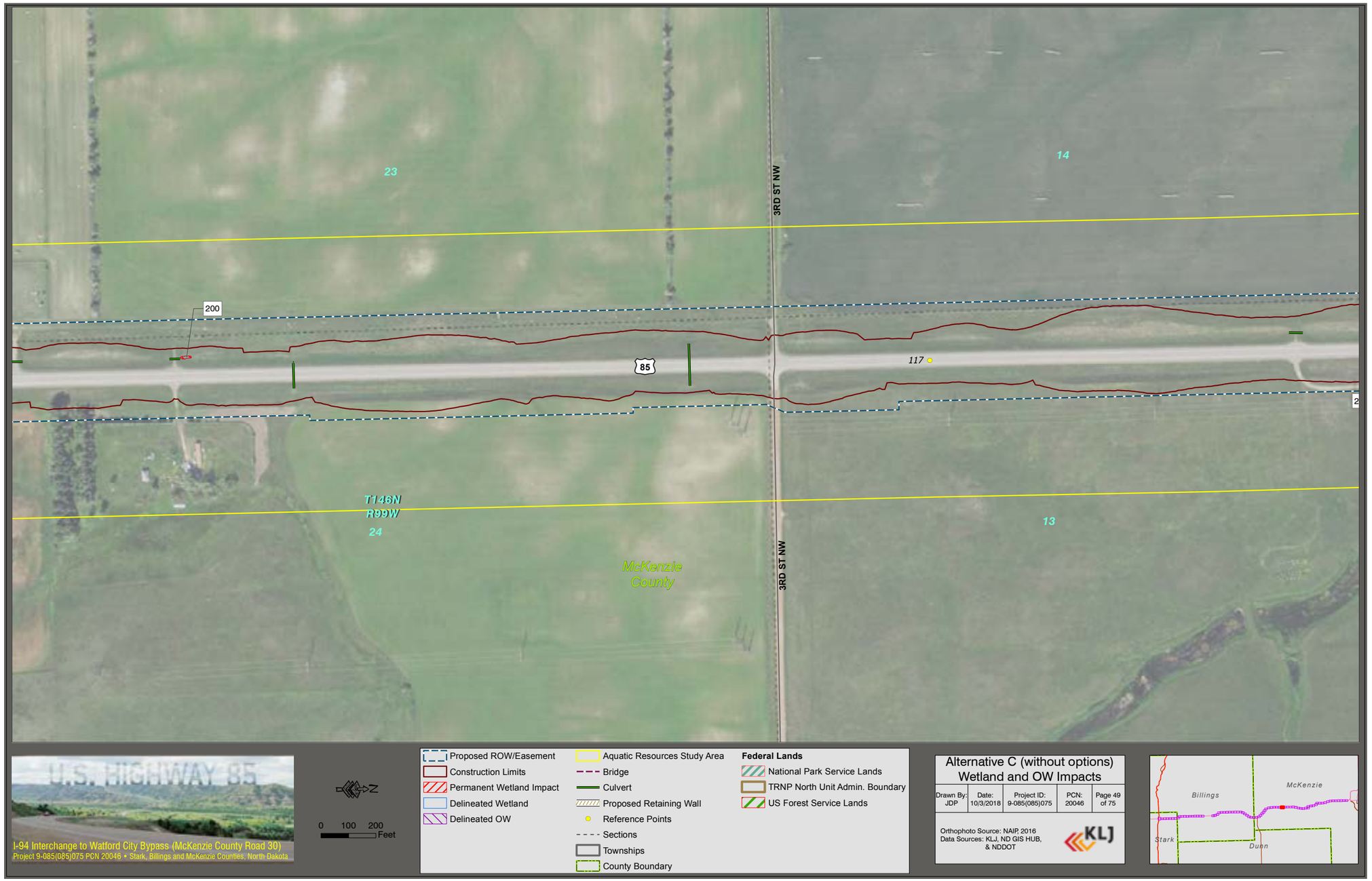
Alternative C (without options)
Wetland and OW Impacts

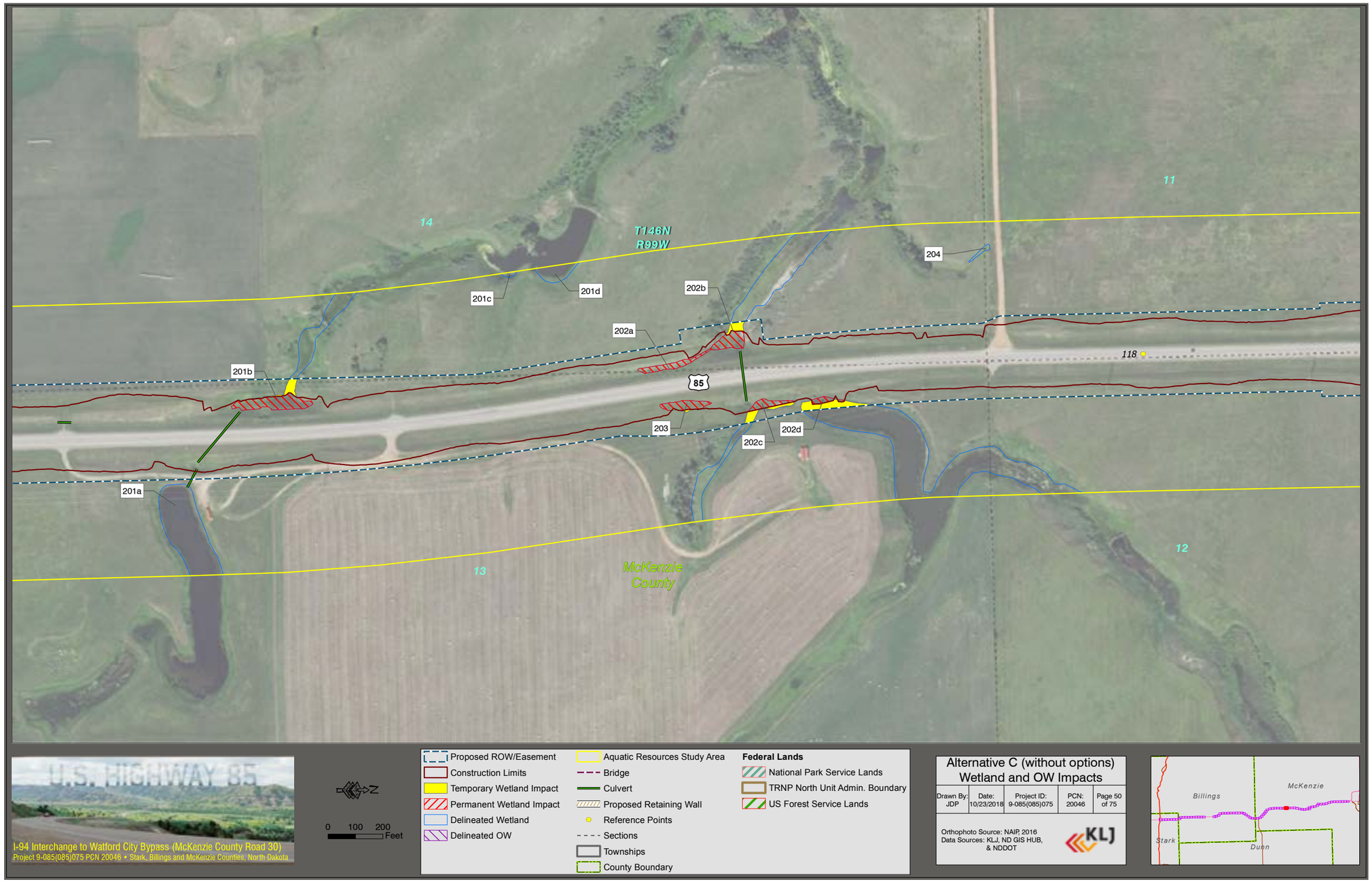
Drawn By:	Date:	Project ID:	PCN:	Page 47 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


26
23
T146N
R99W
197
198a
85
116
199
198b
McKenzie
County
25
24
2ND ST NW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 48 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


23
14
3RD ST NW
200
85
117
T146N
R99W
24
McKenzie
County
13
3RD ST NW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 49 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

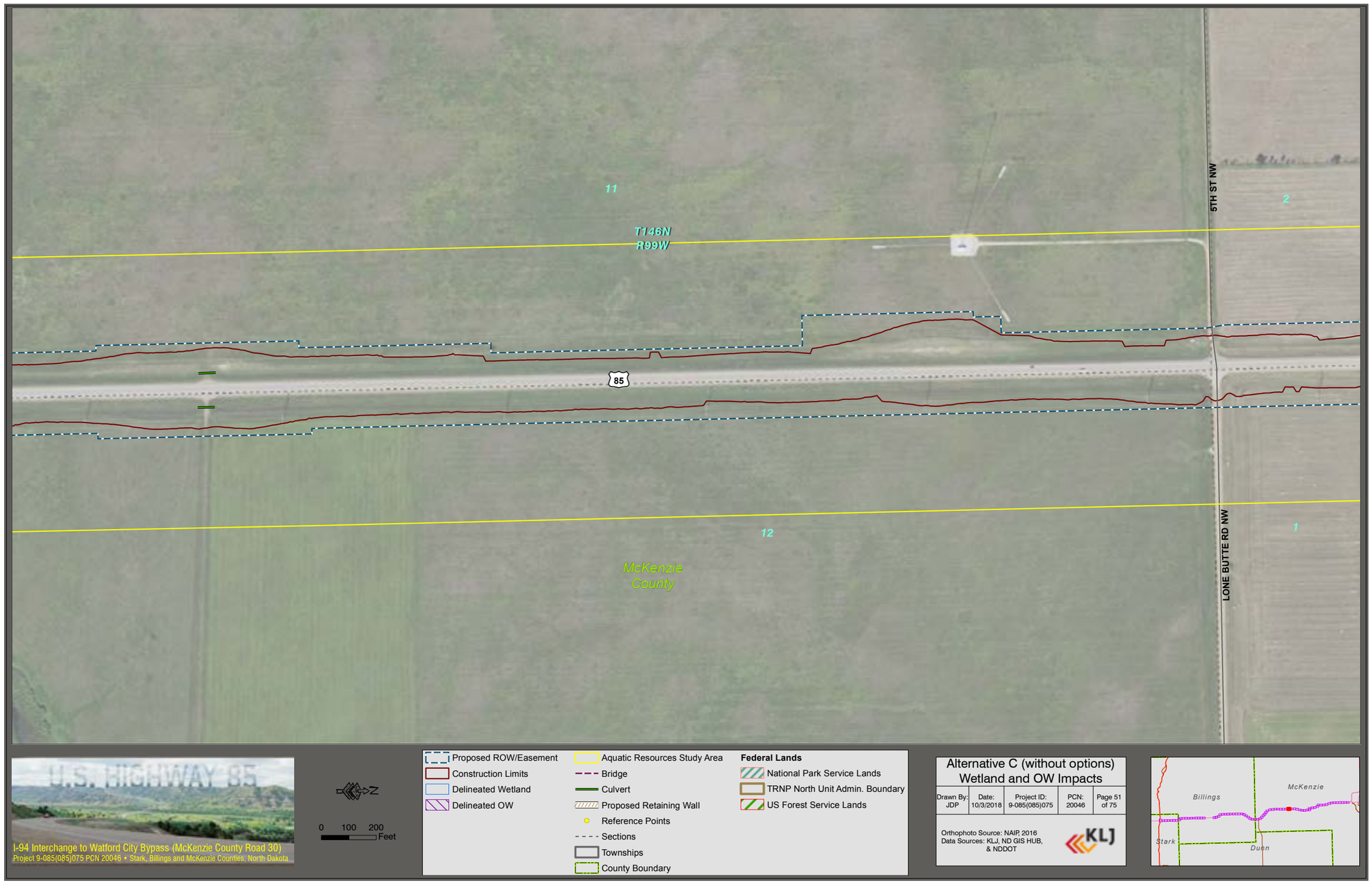
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

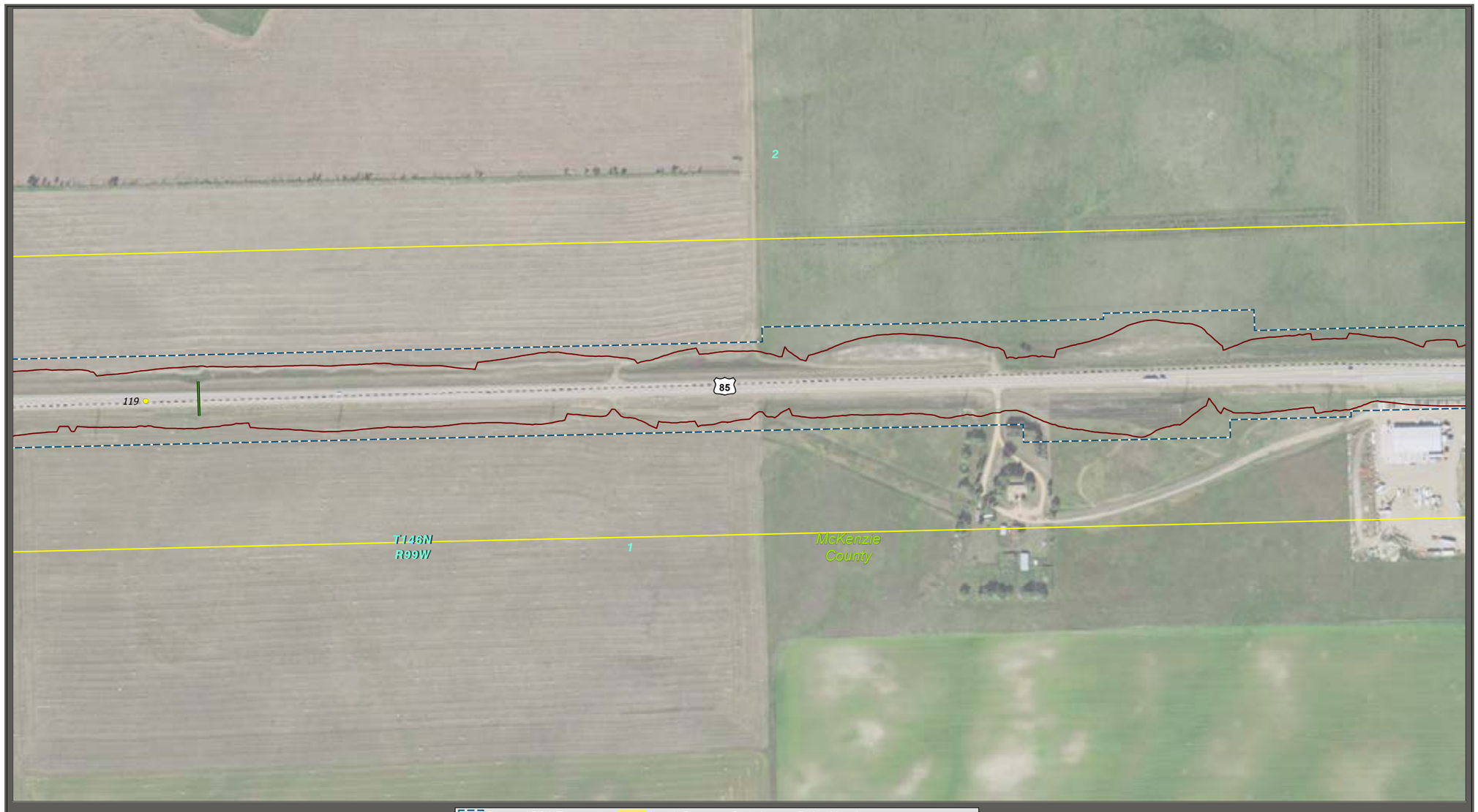
Alternative C (without options) Wetland and OW Impacts

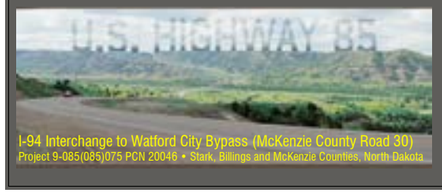
Drawn By:	Date:	Project ID:	PCN:	Page 50 of 75
JDP	10/23/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


11
T146N
R99W
2
5TH ST NW
85
12
1
LONE BUTTE RD NW
McKenzie
County
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 51 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

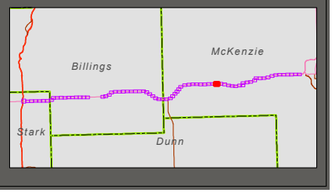
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

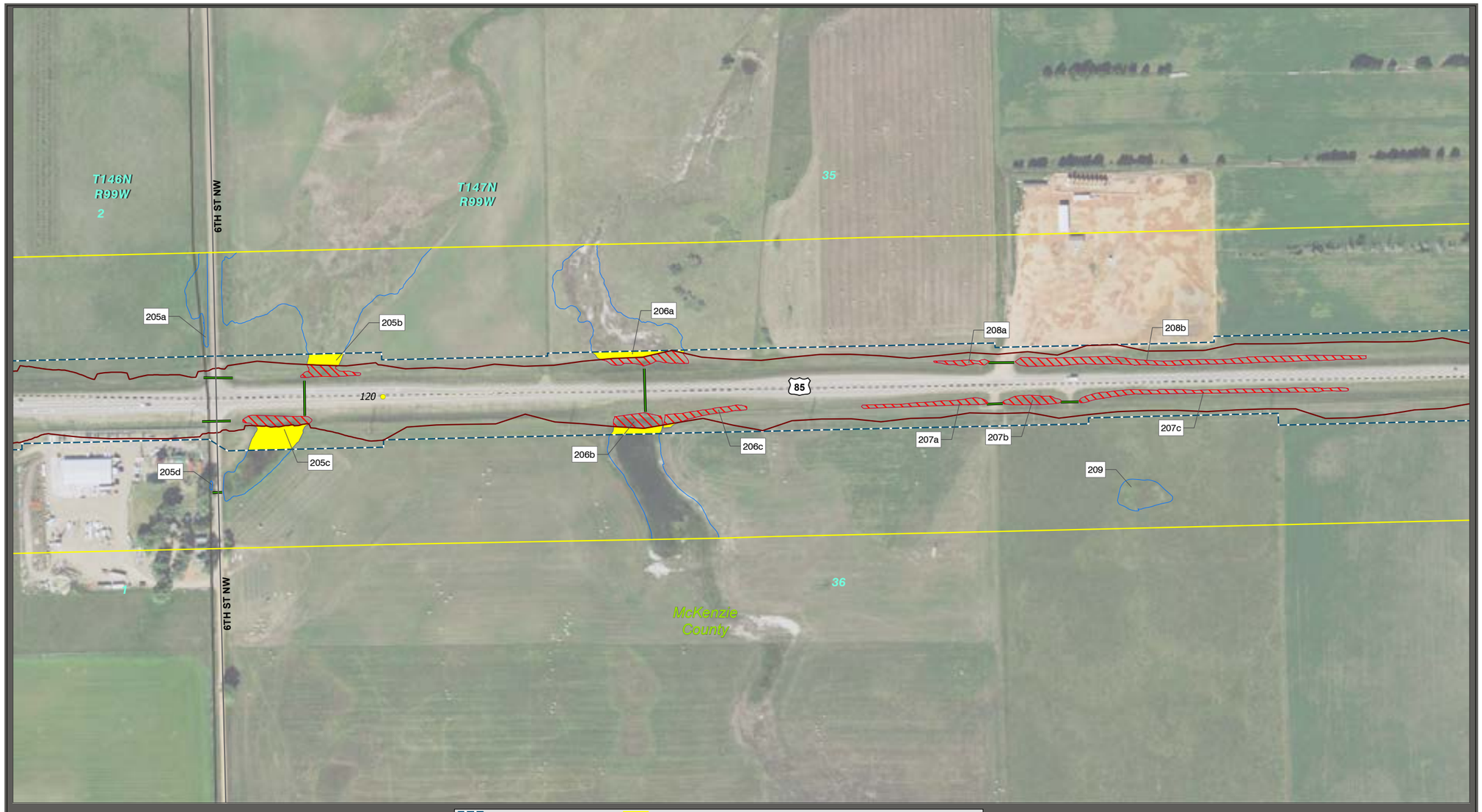
Alternative C (without options) Wetland and OW Impacts

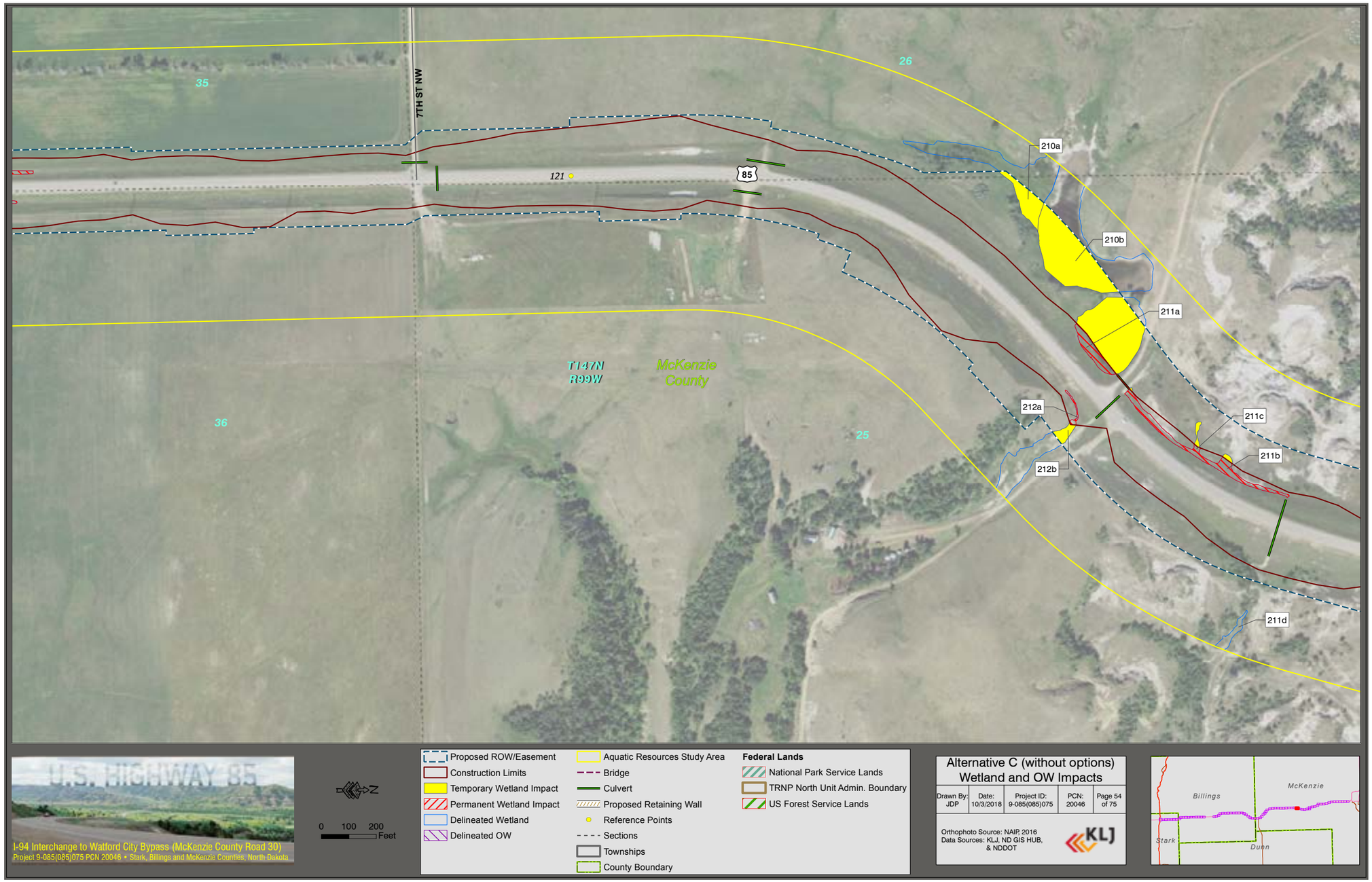
Drawn By:	Date:	Project ID:	PCN:	Page 52 of 75
JDP	10/3/2018	9-085(085)075	20046	

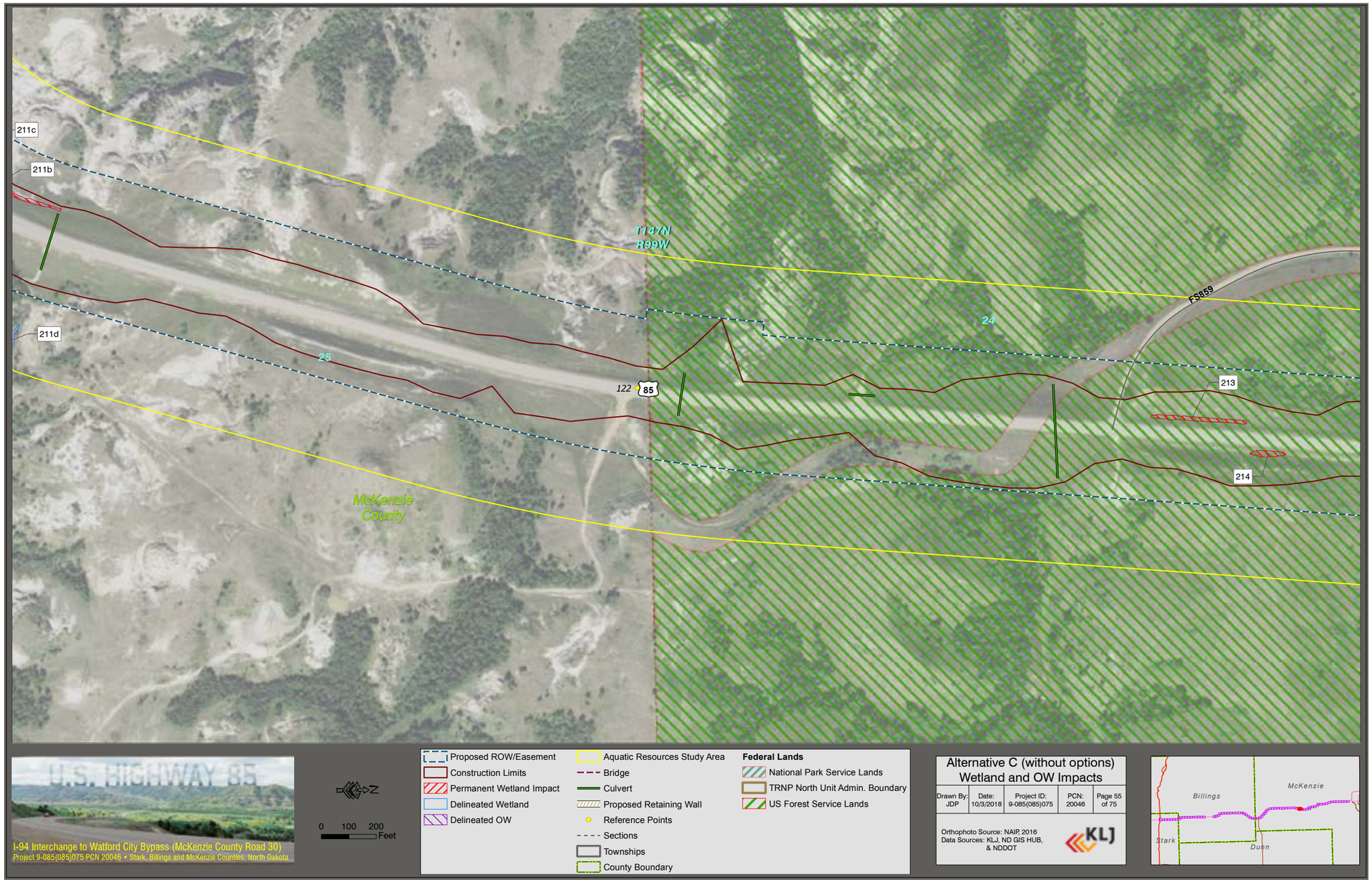
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

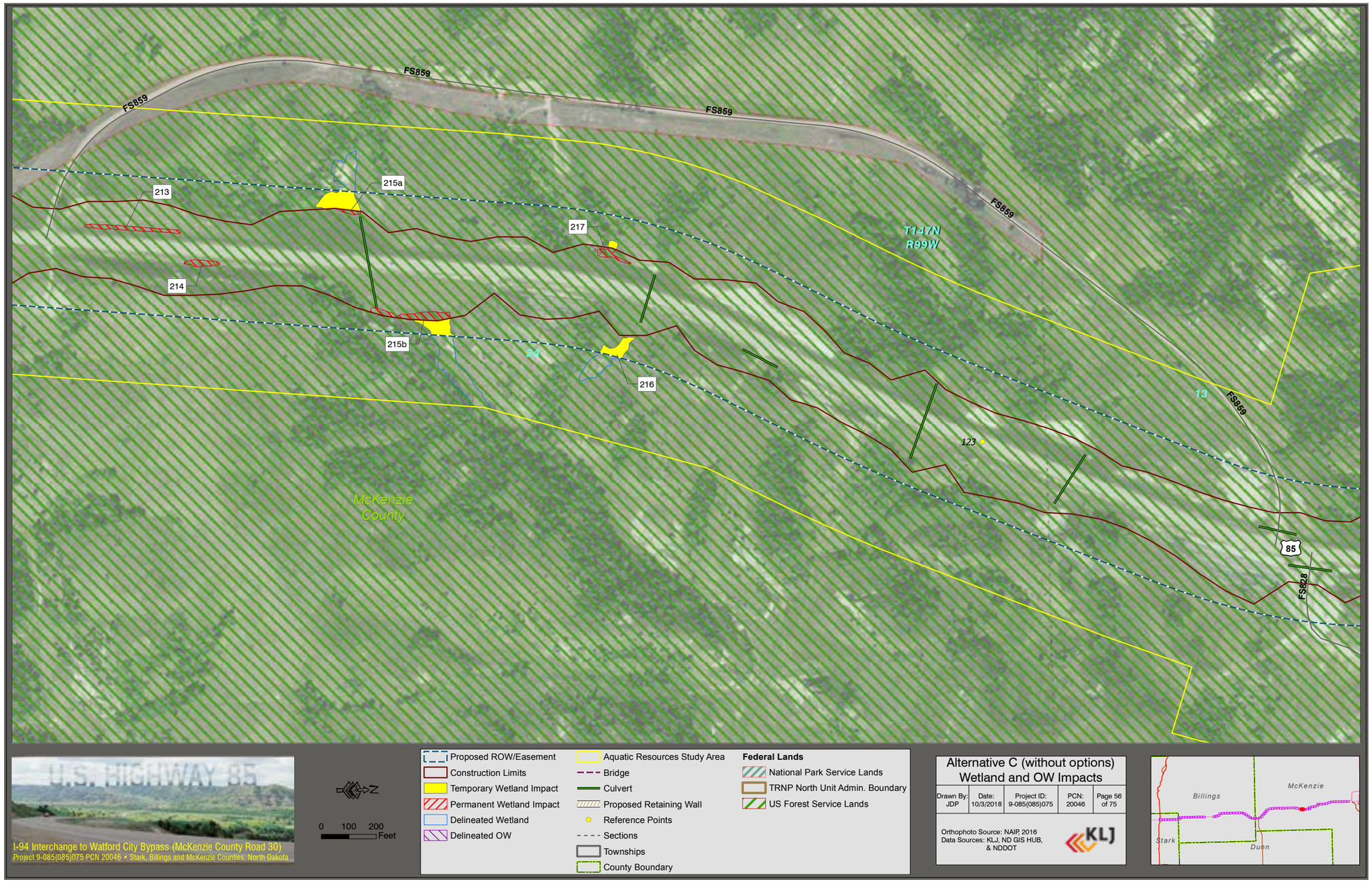
KLJ




T146N
R99W
2
6TH ST NW
T147N
R99W
35
205a
205b
206a
208a
208b
85
120
205c
206b
206c
207a
207b
207c
205d
209
1
36
McKenzie
County
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
0 100 200
Feet
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/23/2018
Project ID: 9-085(085)075
PCN: 20046
Page 53 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


35
7TH ST NW
26
121
85
210a
210b
211a
T147N
R99W
McKenzie
County
212a
211c
211b
212b
36
25
211d
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 54 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


211c
211b
211d
T147N
R99W
24
25
122
85
FS859
213
214
McKenzie
County
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 55 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



0 100 200 Feet

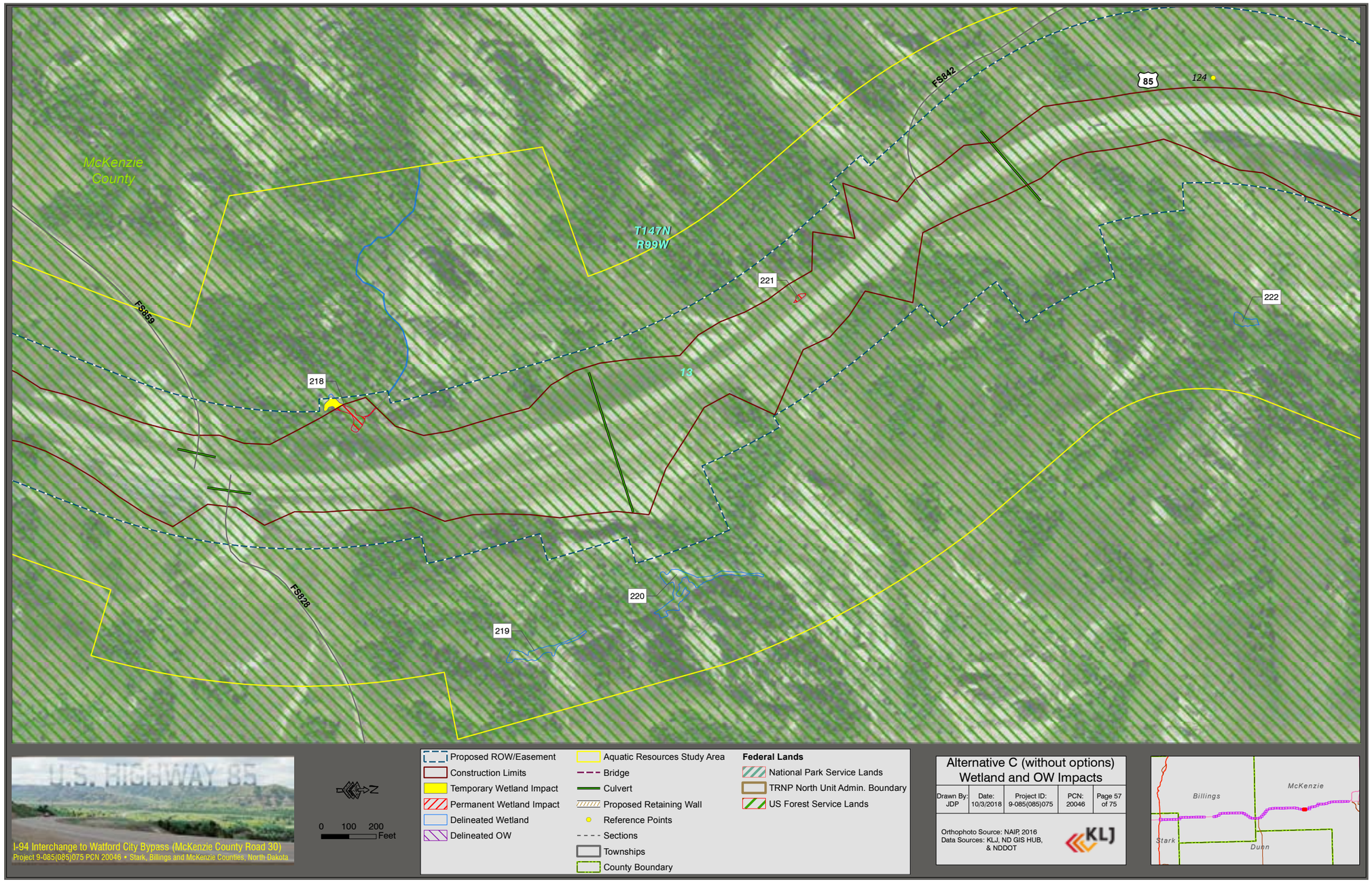
- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Alternative C (without options) Wetland and OW Impacts

Drawn By: JDP	Date: 10/3/2018	Project ID: 9-085(085)075	PCN: 20046	Page 56 of 75

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT



0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

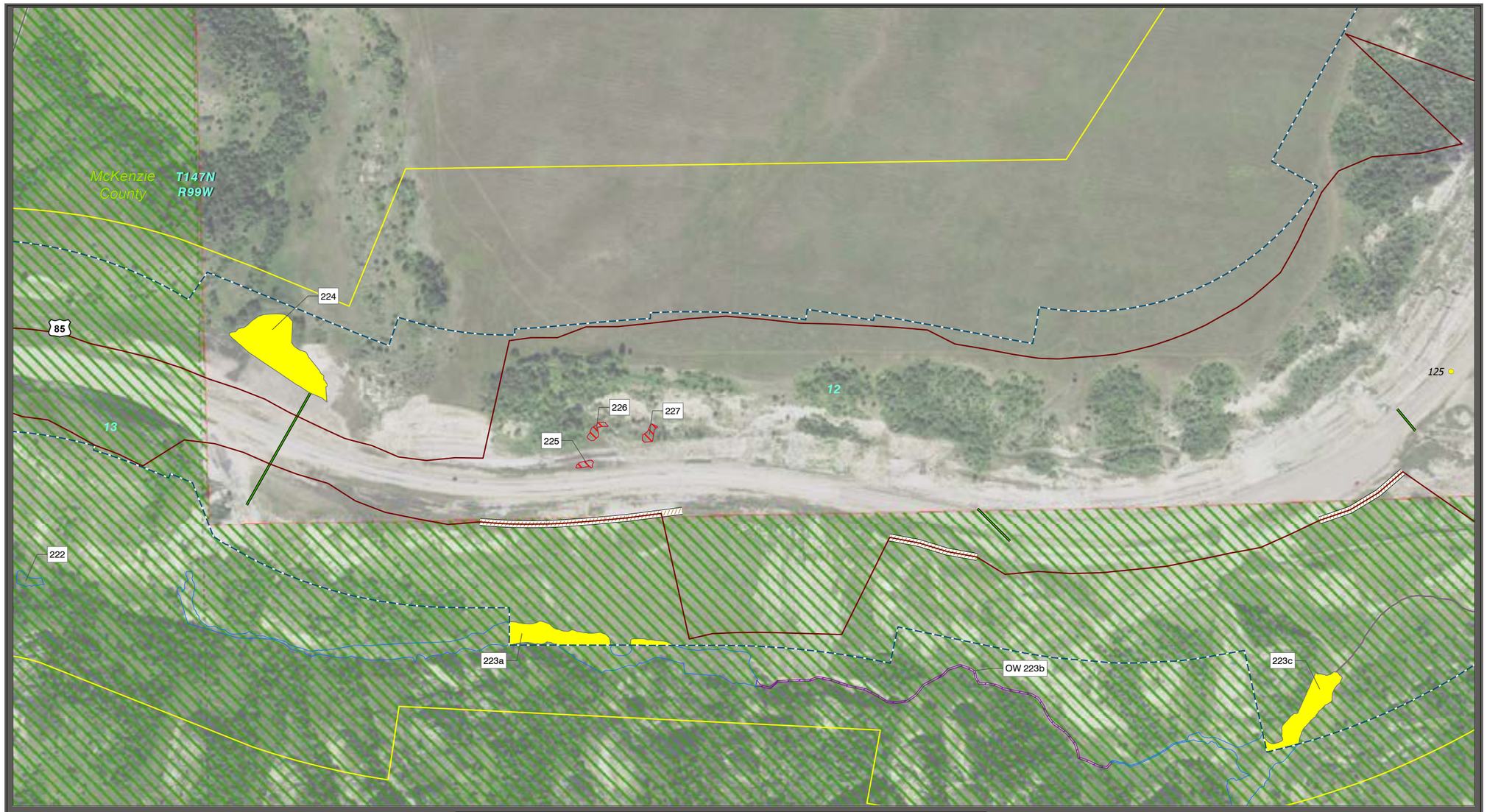
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

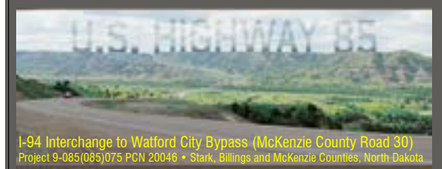
Alternative C (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 57 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ





0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary OW Impact
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

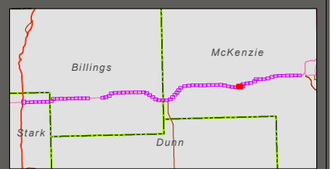
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

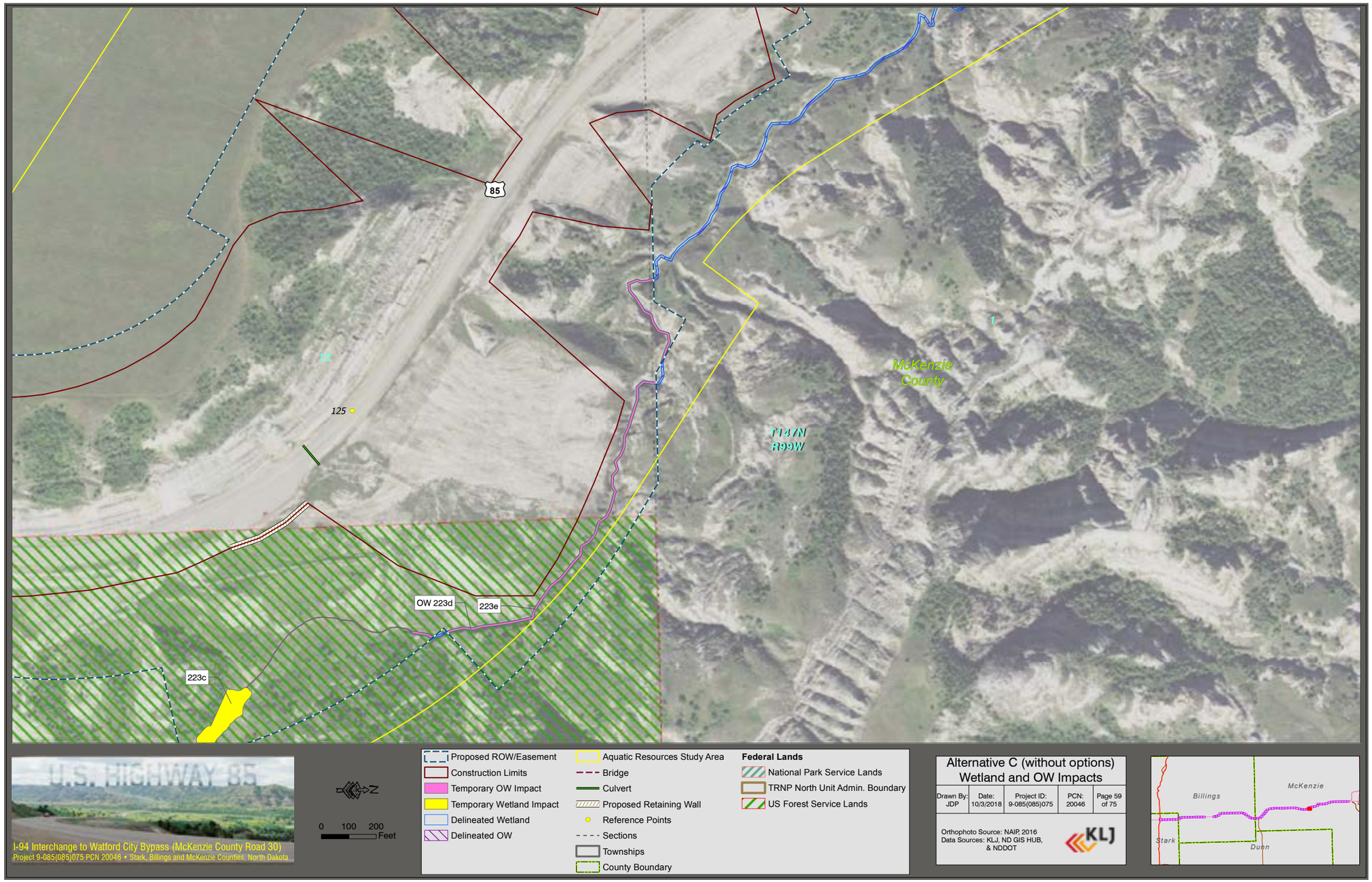
Alternative C (without options) Wetland and OW Impacts

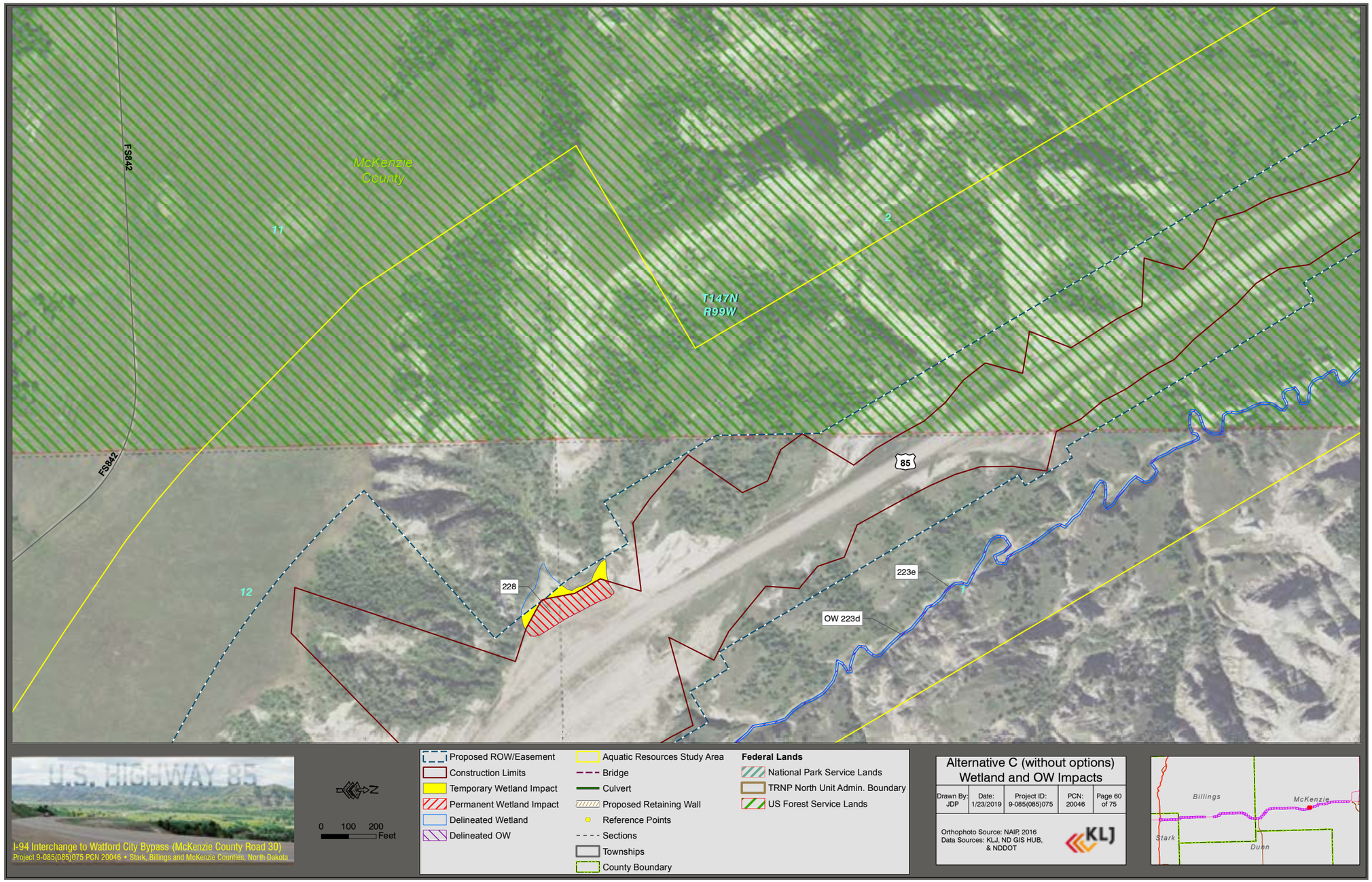
Drawn By:	Date:	Project ID:	PCN:	Page 58 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ




85
1x
125
McKenzie
County
1
T147N
R99W
OW 223d
223e
223c
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary OW Impact
Temporary Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 59 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

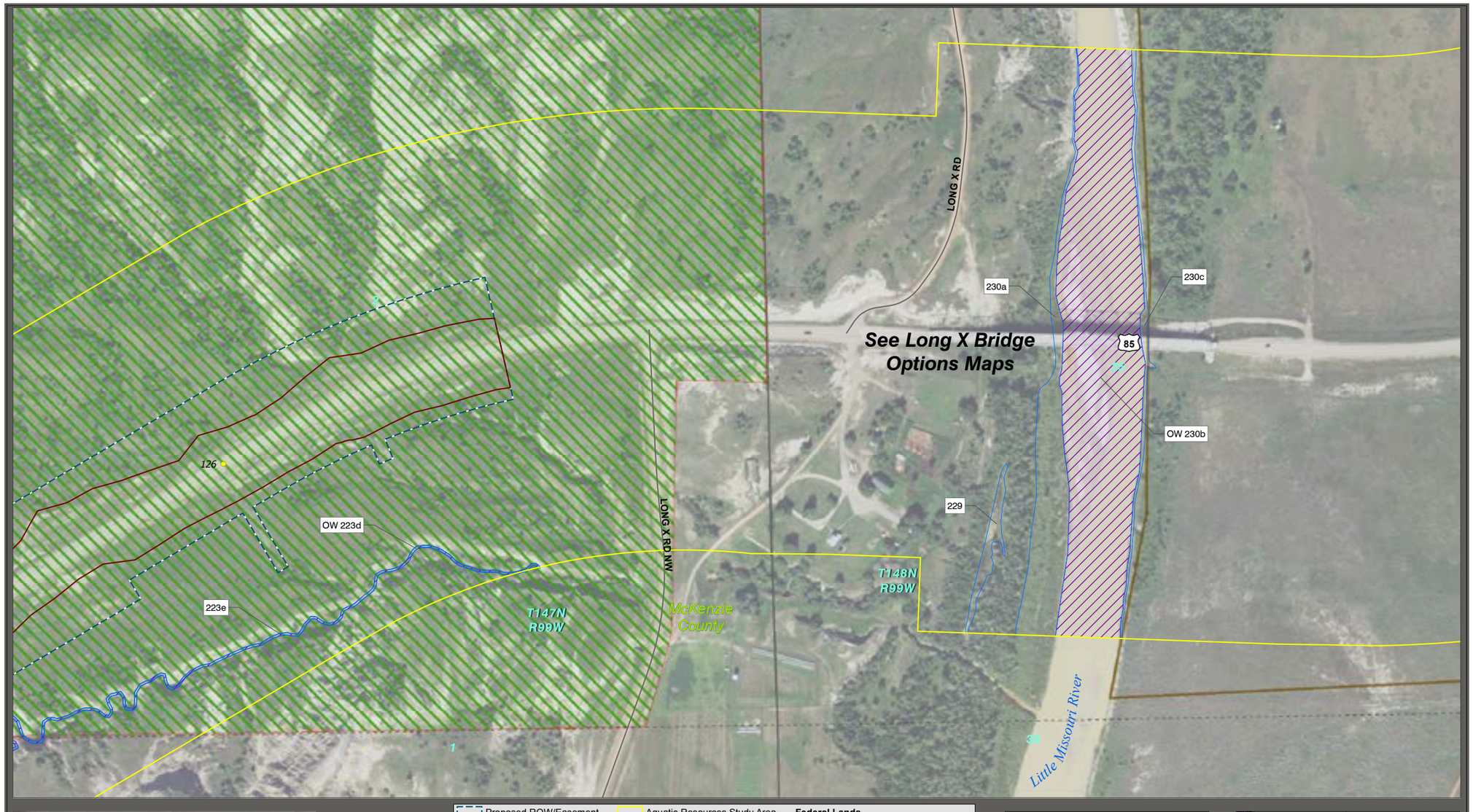
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

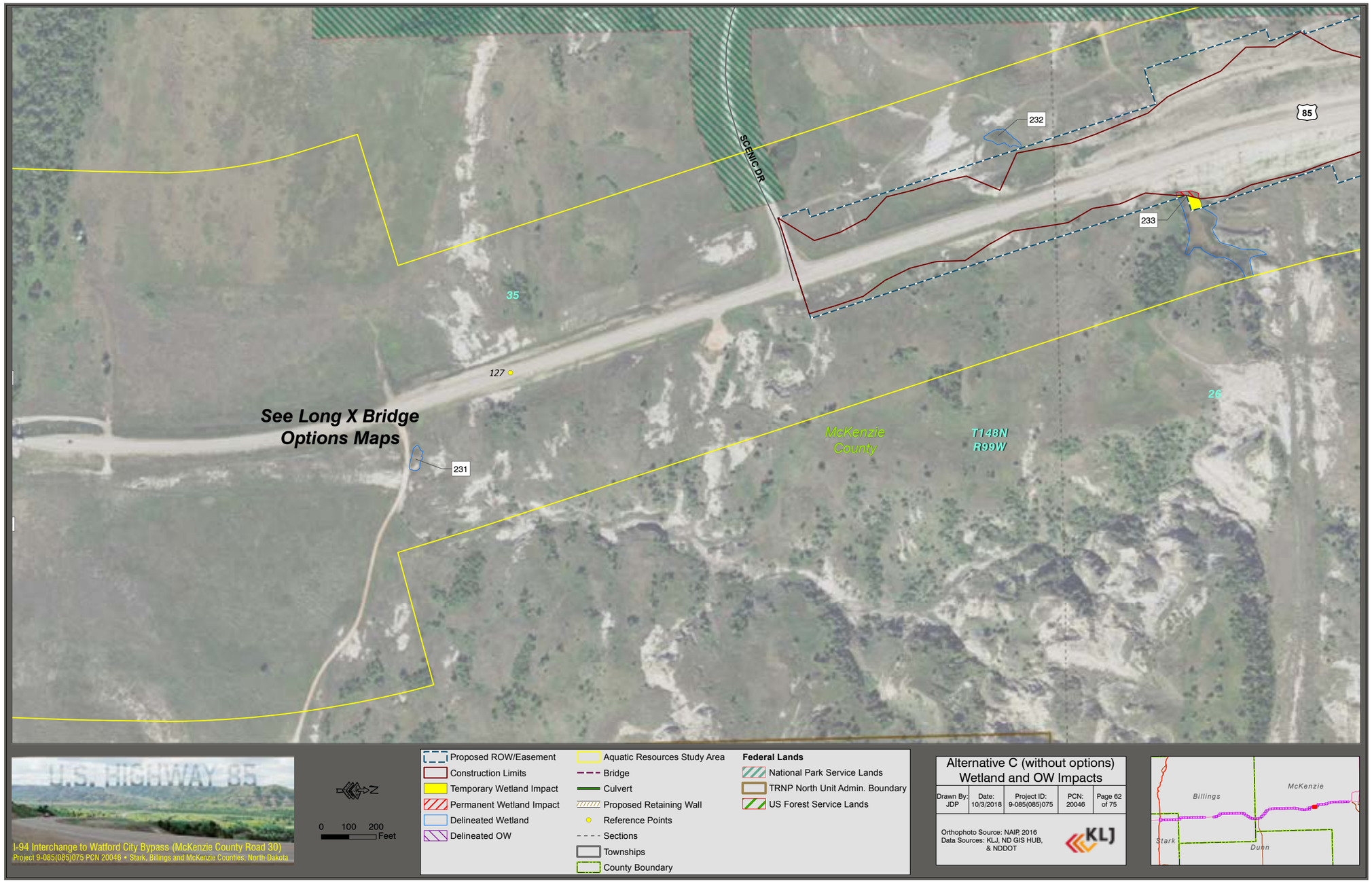
Alternative C (without options) Wetland and OW Impacts

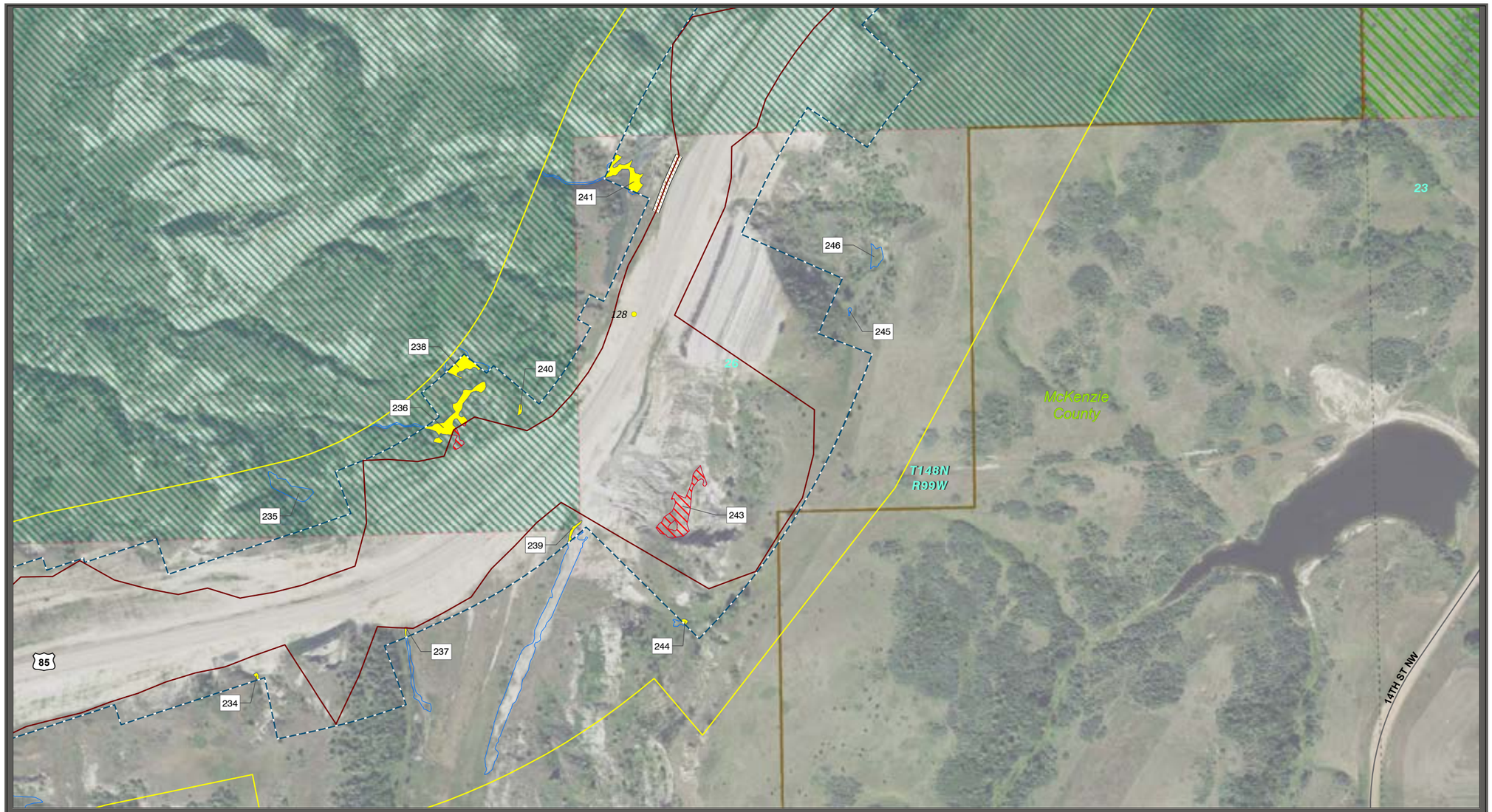
Drawn By:	Date:	Project ID:	PCN:	Page 60 of 75
JDP	1/23/2019	9-085(085)075	20046	

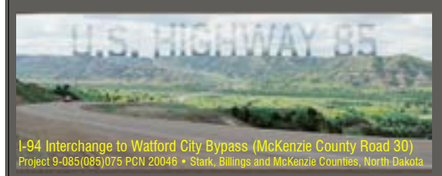
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


LONG X RD
230a
230c
See Long X Bridge Options Maps
85
OW 230b
229
126
OW 223d
223e
T147N R99W
LONG X RD NW
McKenzie County
T148N R99W
Little Missouri River
2
1
36
Proposed ROW/Easement
Construction Limits
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
0 100 200 Feet
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 61 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


SCENIC DR
85
232
233
231
127
35
26
See Long X Bridge Options Maps
McKenzie County
T148N
R99W
0 100 200 Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 62 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota





0 100 200 Feet

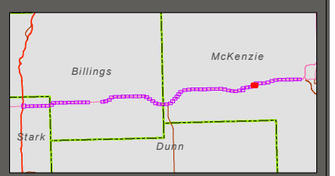
- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

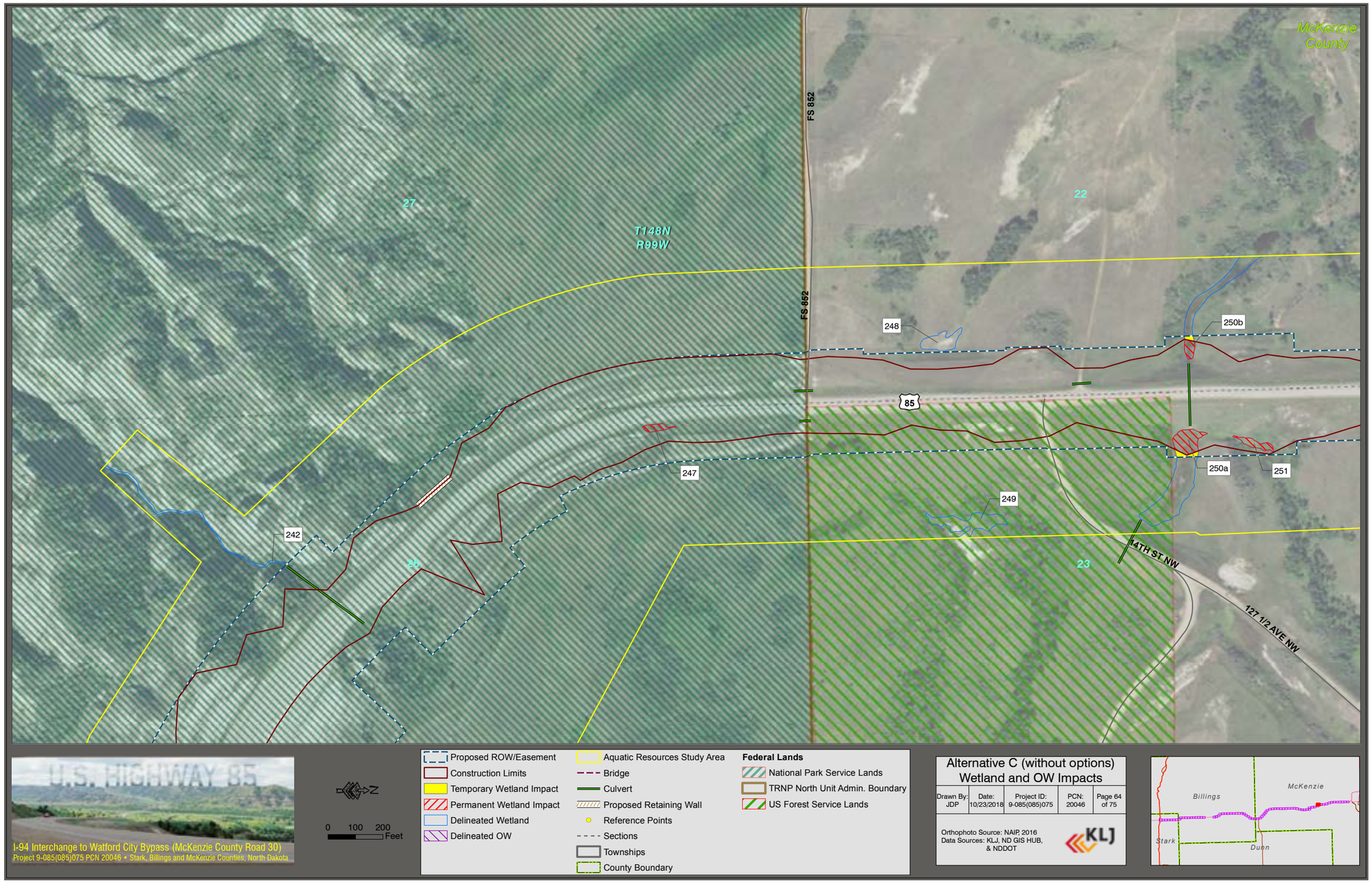
Federal Lands
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

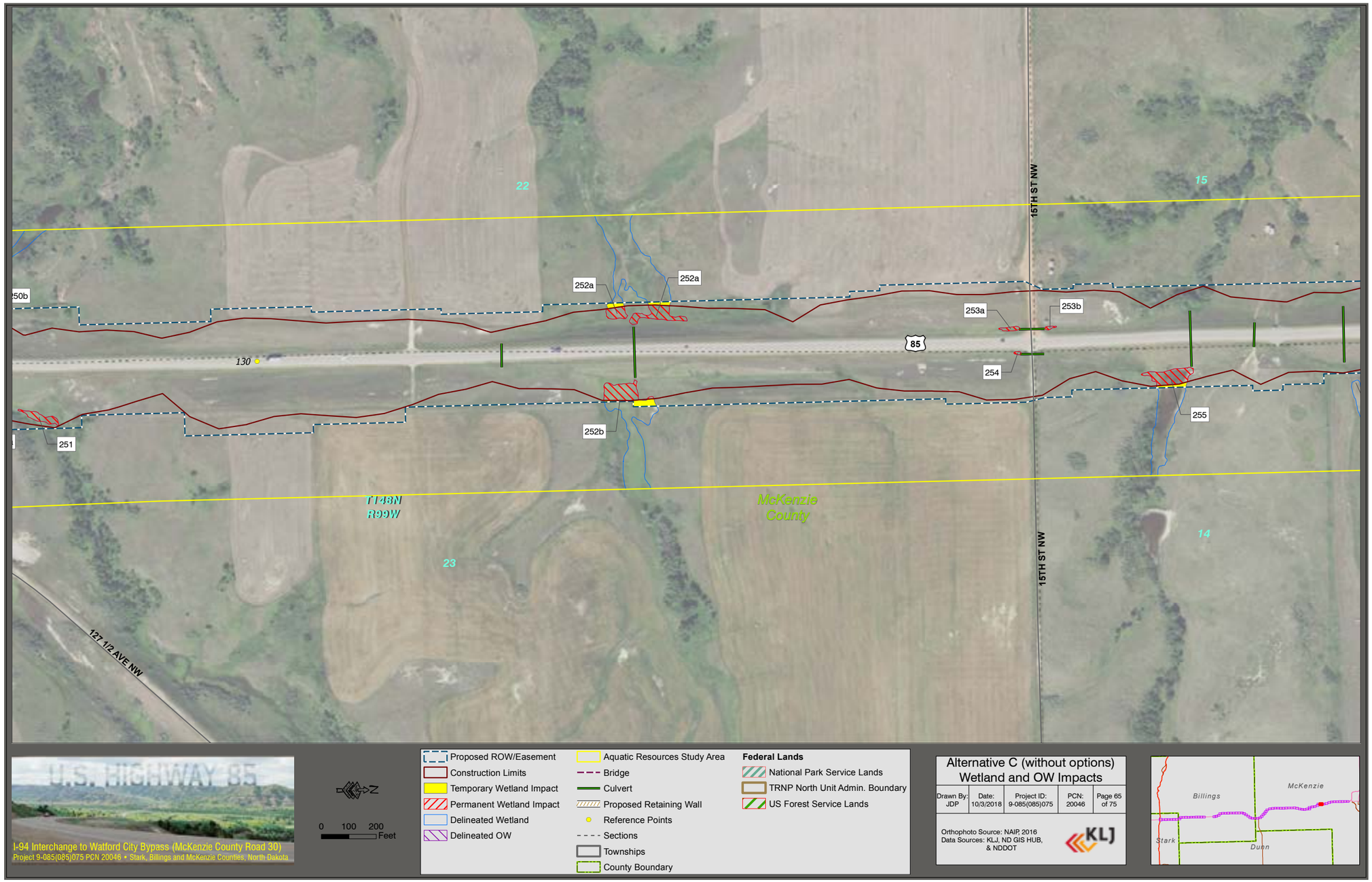
Alternative C (without options) Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 63 of 75
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT




McKenzie County
27
22
25
23
T148N
R99W
FS 852
FS 862
248
250b
250a
251
247
249
242
85
14TH ST NW
127 1/2 AVE NW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200 Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/23/2018
Project ID: 9-085(085)075
PCN: 20046
Page 64 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn



N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

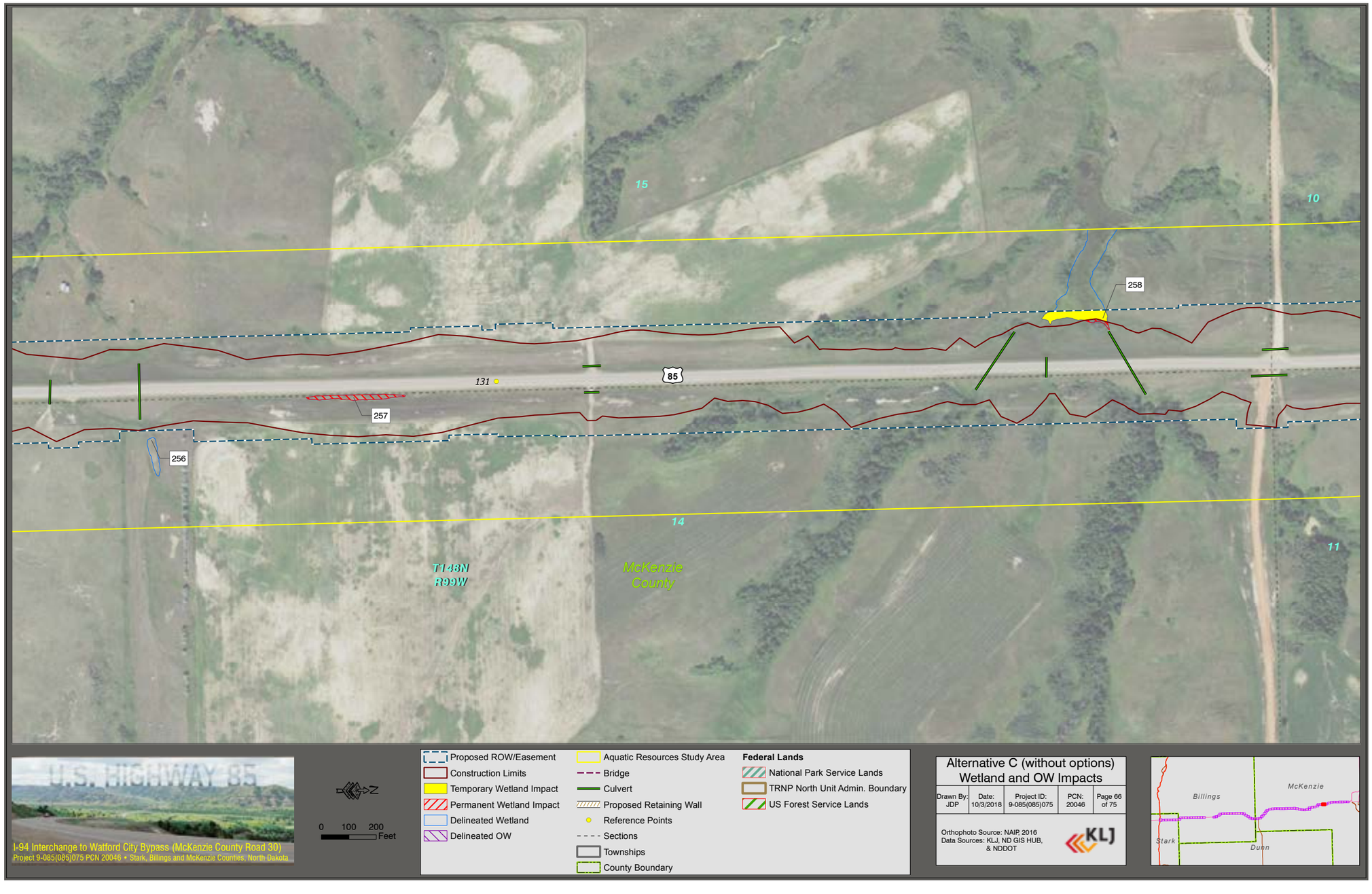
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

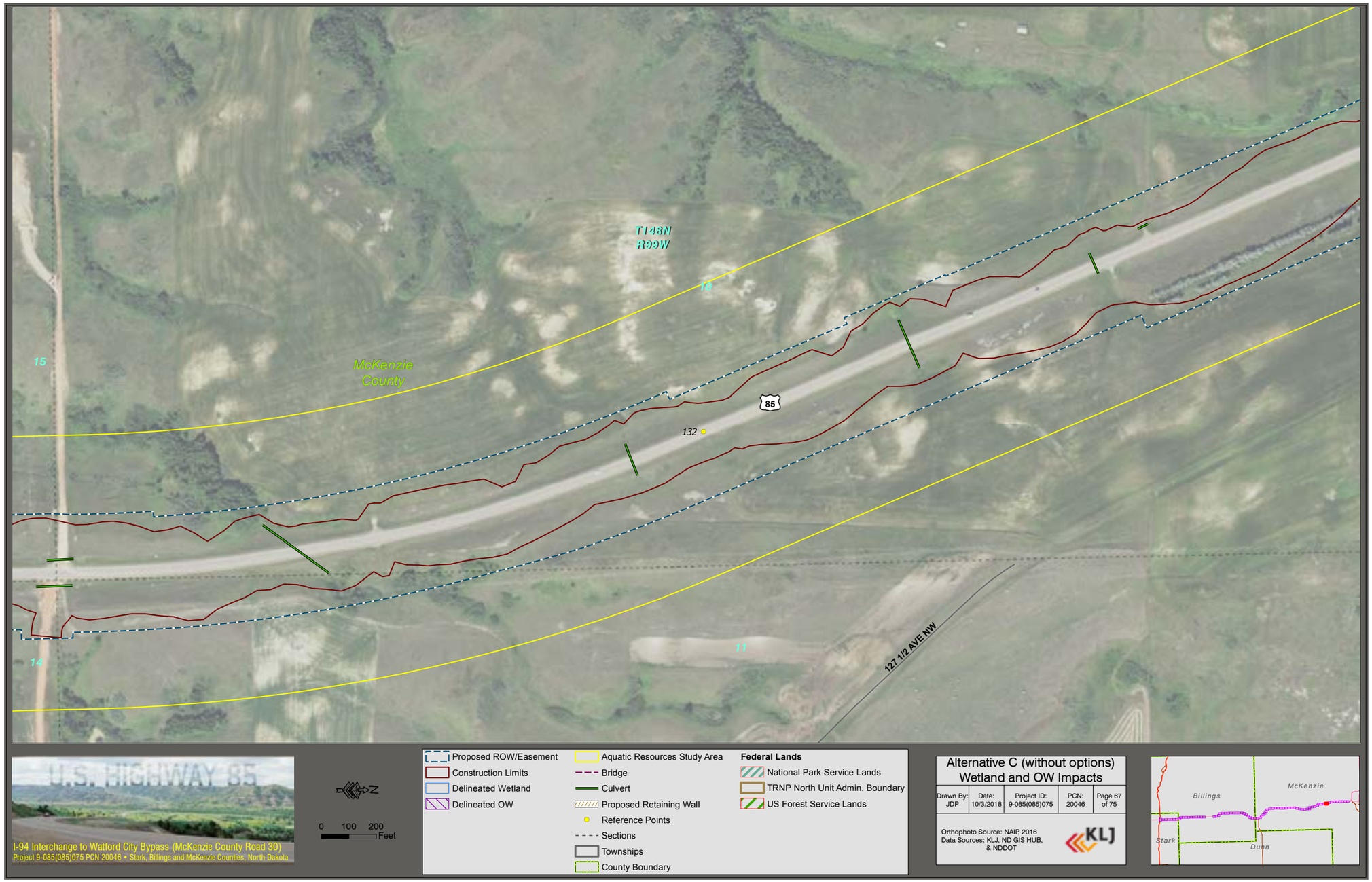
Alternative C (without options) Wetland and OW Impacts

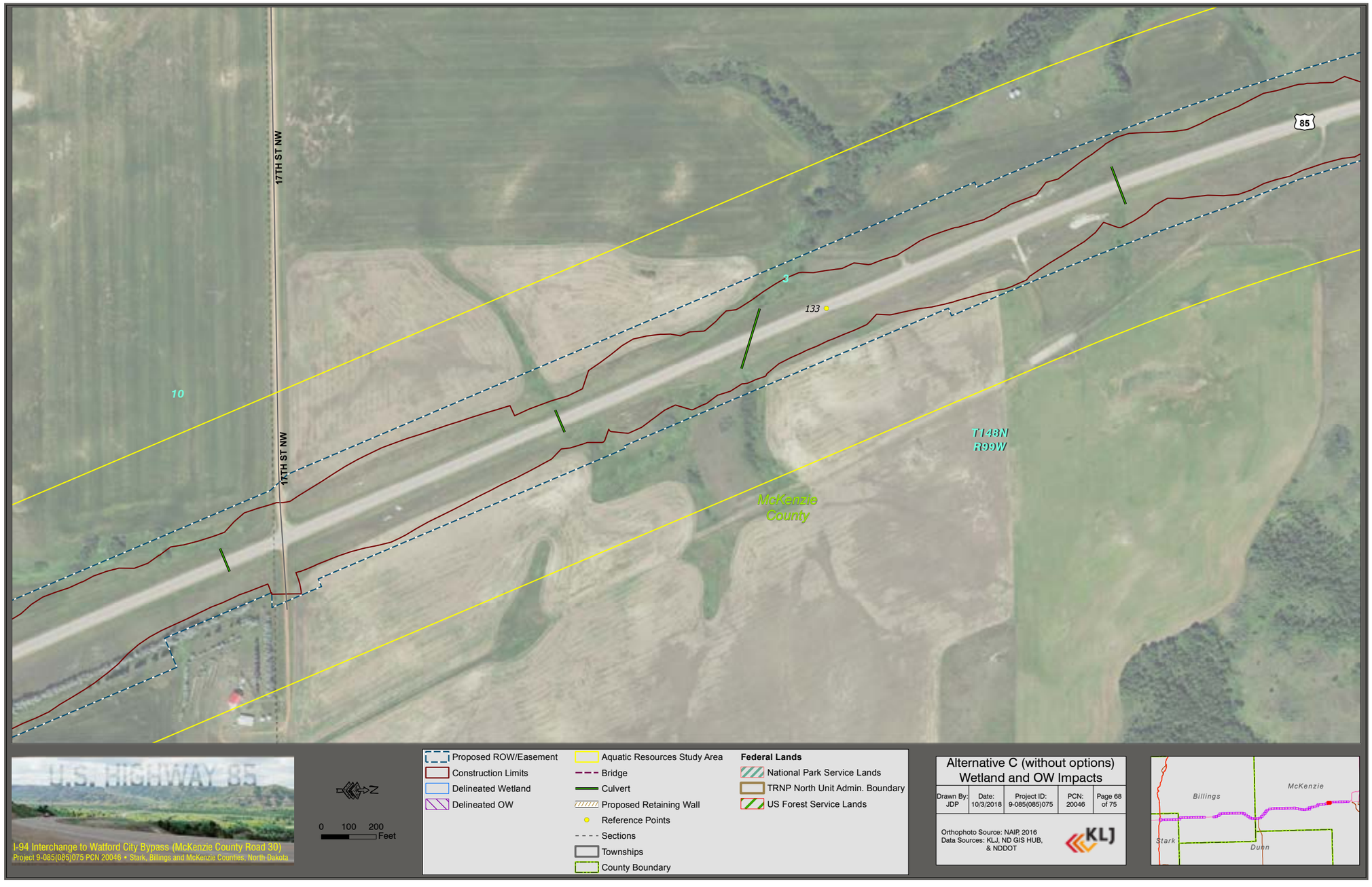
Drawn By:	Date:	Project ID:	PCN:	Page 65 of 75
JDP	10/3/2018	9-085(085)075	20046	

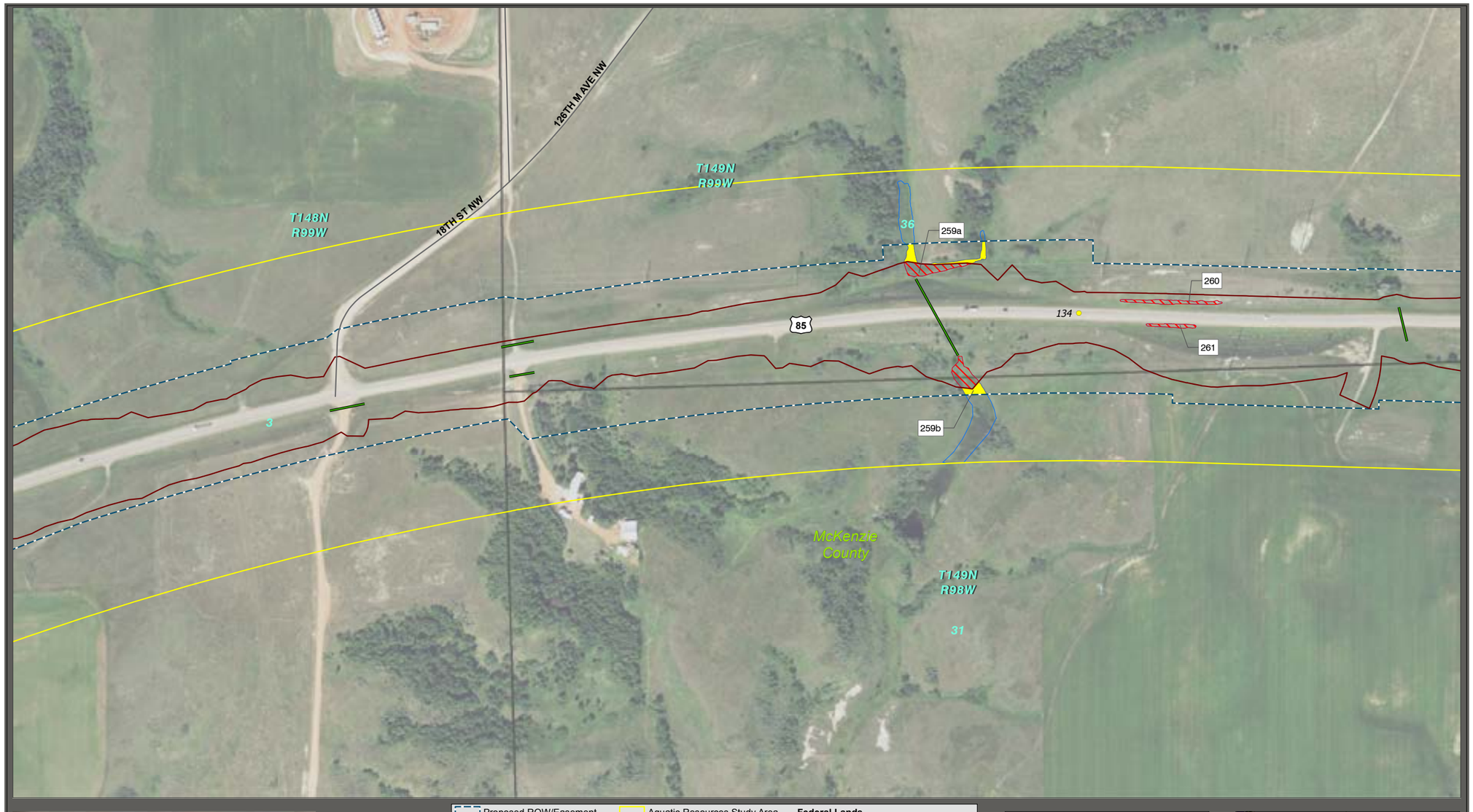
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

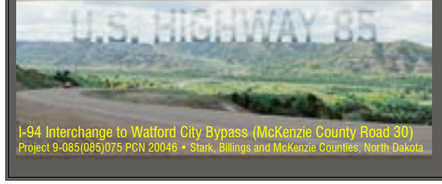
KLJ


15
10
258
131
85
257
256
14
11
T148N
R99W
McKenzie
County
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 66 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


T148N
R99W
15
16
McKenzie
County
85
132
14
11
127 1/2 AVE NW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 67 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDOT
KLJ
Billings
McKenzie
Stark
Dunn


17TH ST NW
13TH ST NW
85
3
133
10
T148N
R99W
McKenzie
County
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 68 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

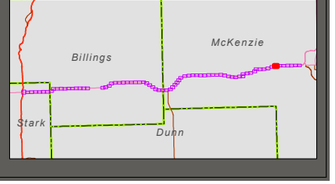
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

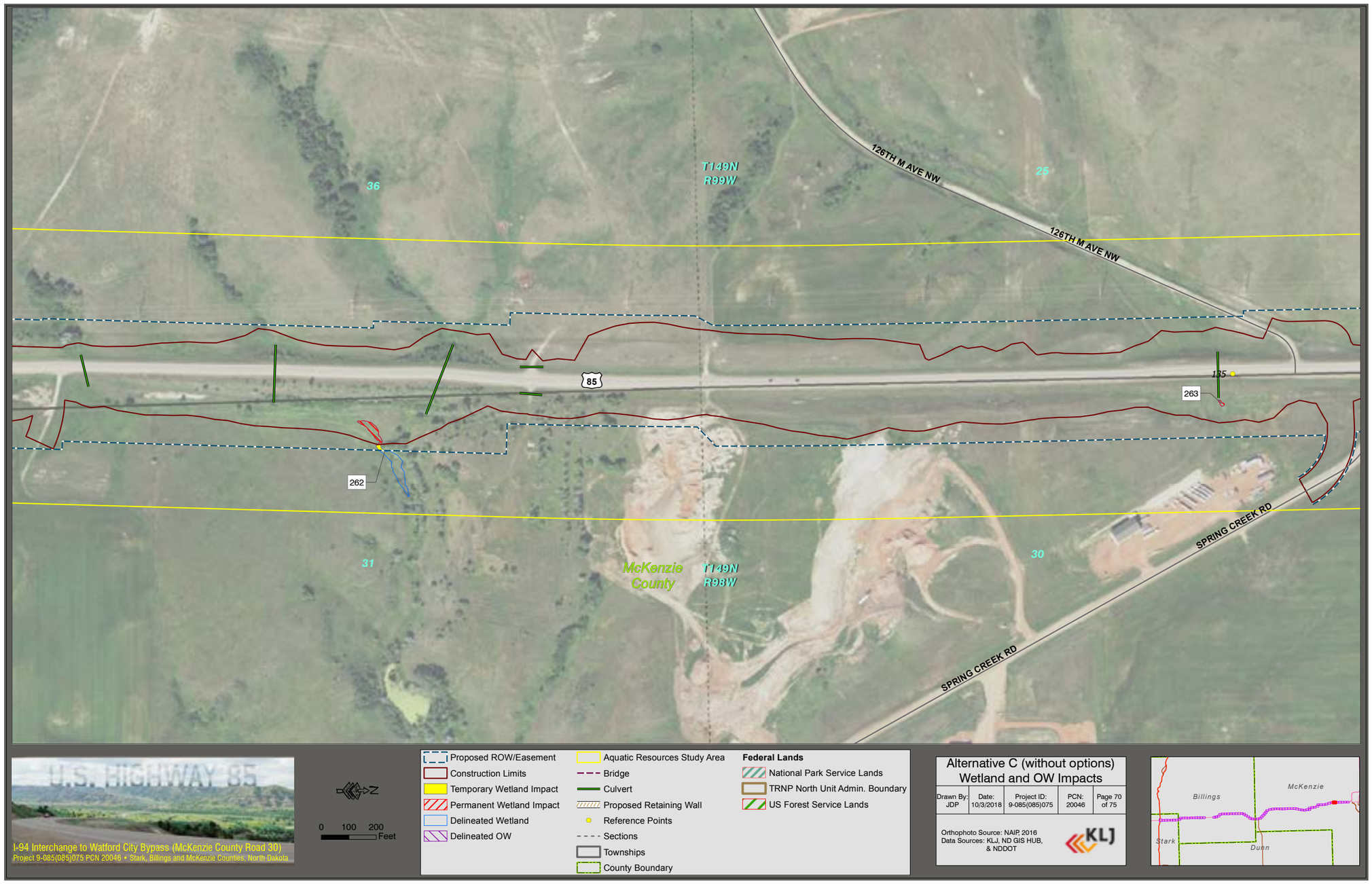
Alternative C (without options) Wetland and OW Impacts

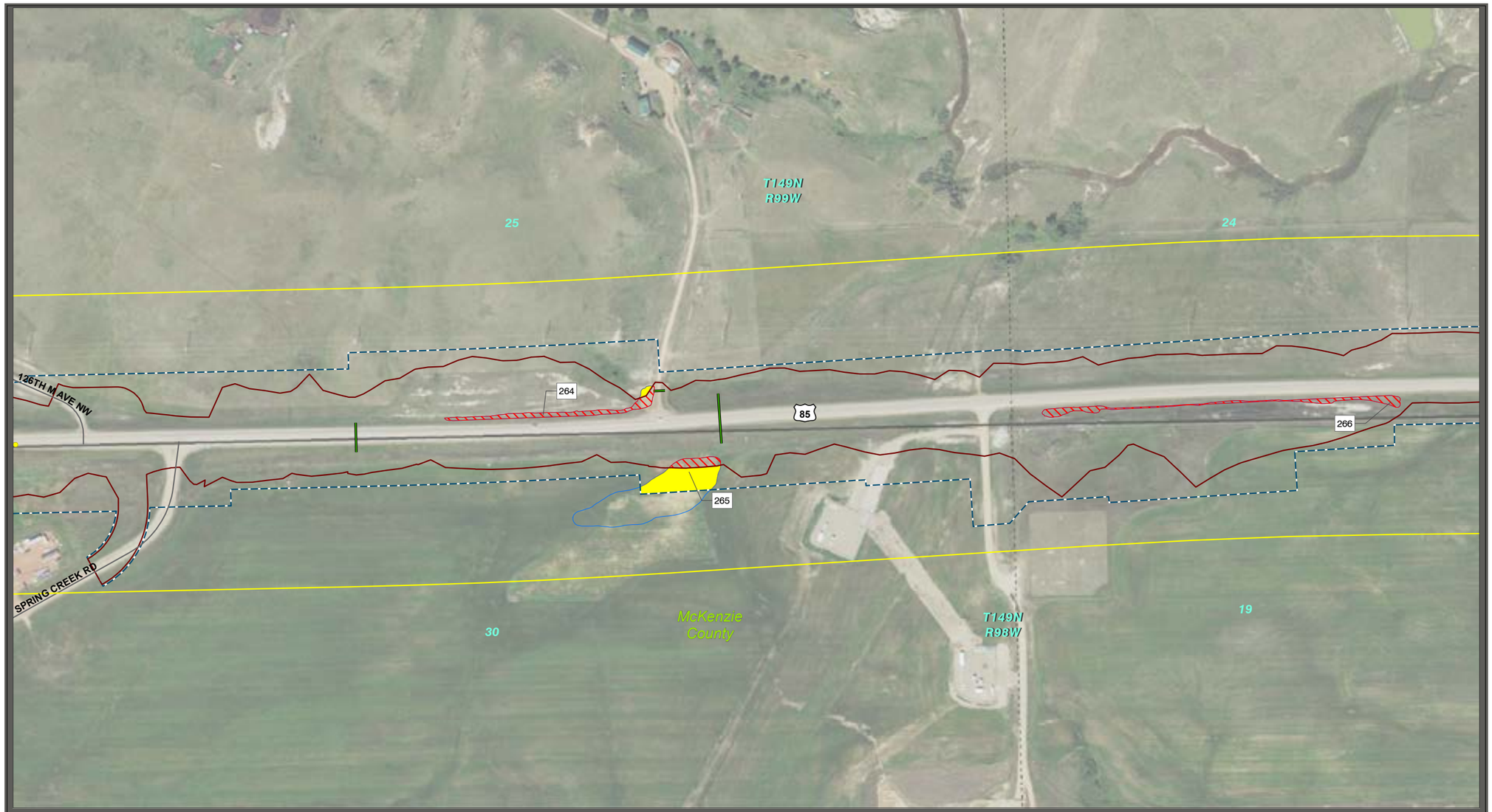
Drawn By:	Date:	Project ID:	PCN:	Page 69 of 75
JDP	10/3/2018	9-085(085)075	20046	

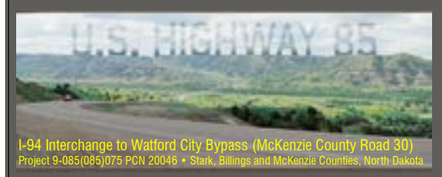
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ




36
T149N
R99W
25
126TH M AVE NW
126TH M AVE NW
85
135
263
262
31
McKenzie
County
T149N
R98W
30
SPRING CREEK RD
SPRING CREEK RD
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 70 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn





N

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

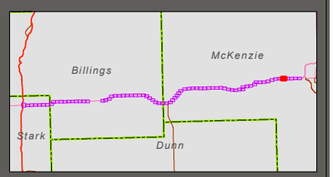
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

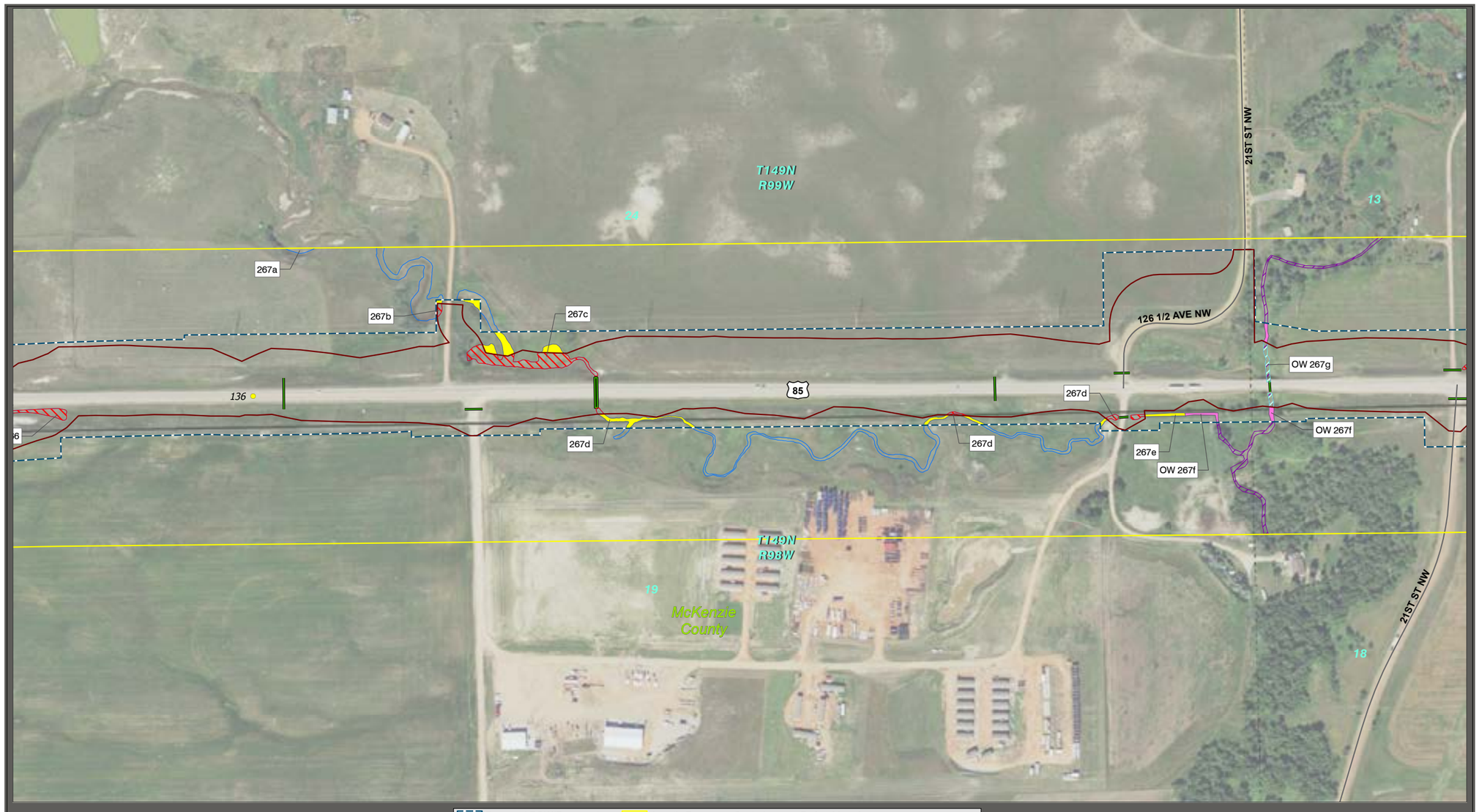
Alternative C (without options) Wetland and OW Impacts

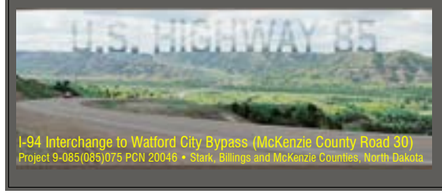
Drawn By:	Date:	Project ID:	PCN:	Page 71 of 75
JDP	10/23/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ







I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota

0 100 200 Feet

- Proposed ROW/Easement
- Construction Limits
- Temporary OW Impact
- Temporary Wetland Impact
- Permanent OW Impact
- Permanent Wetland Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Proposed Retaining Wall
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

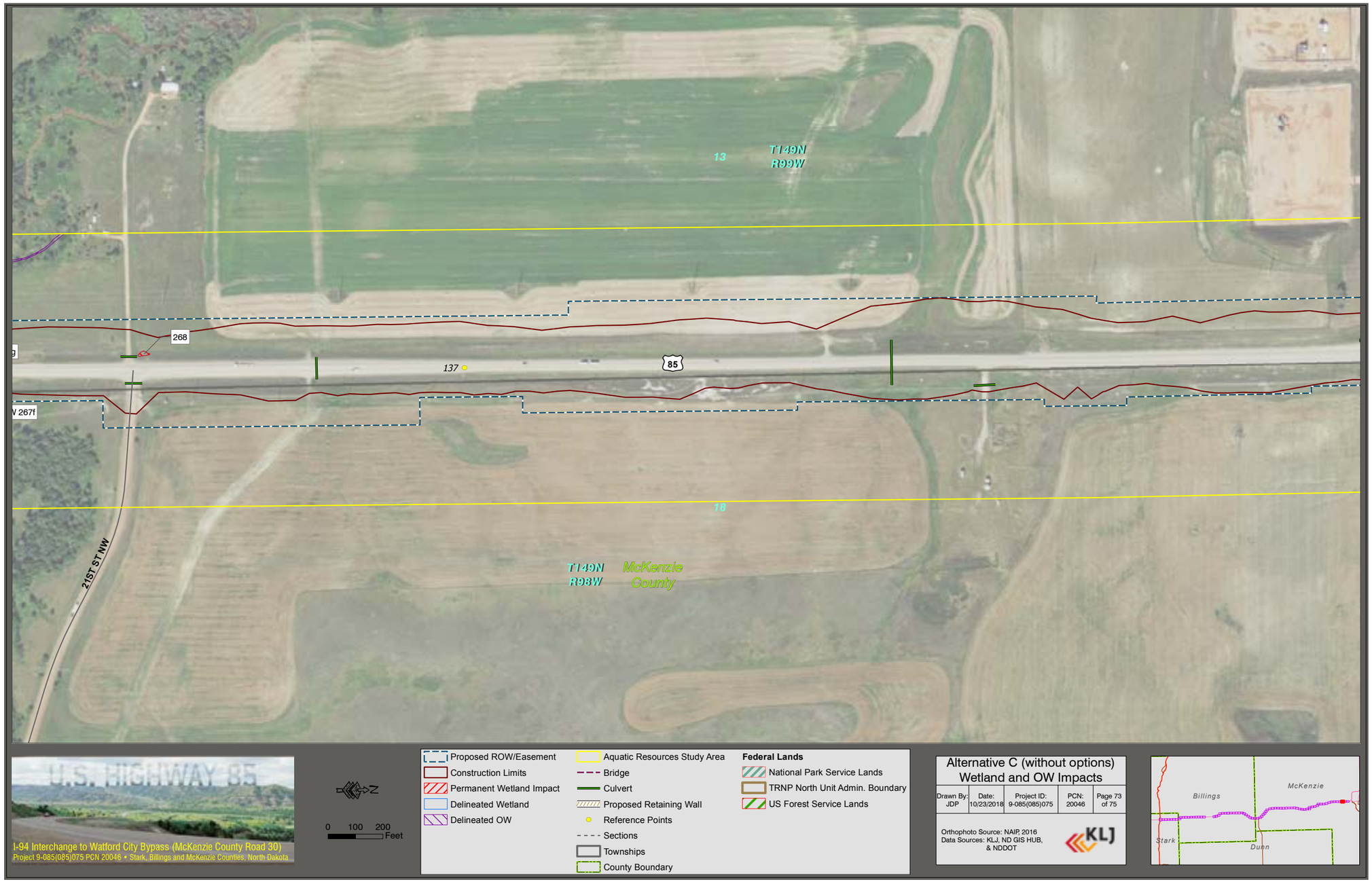
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

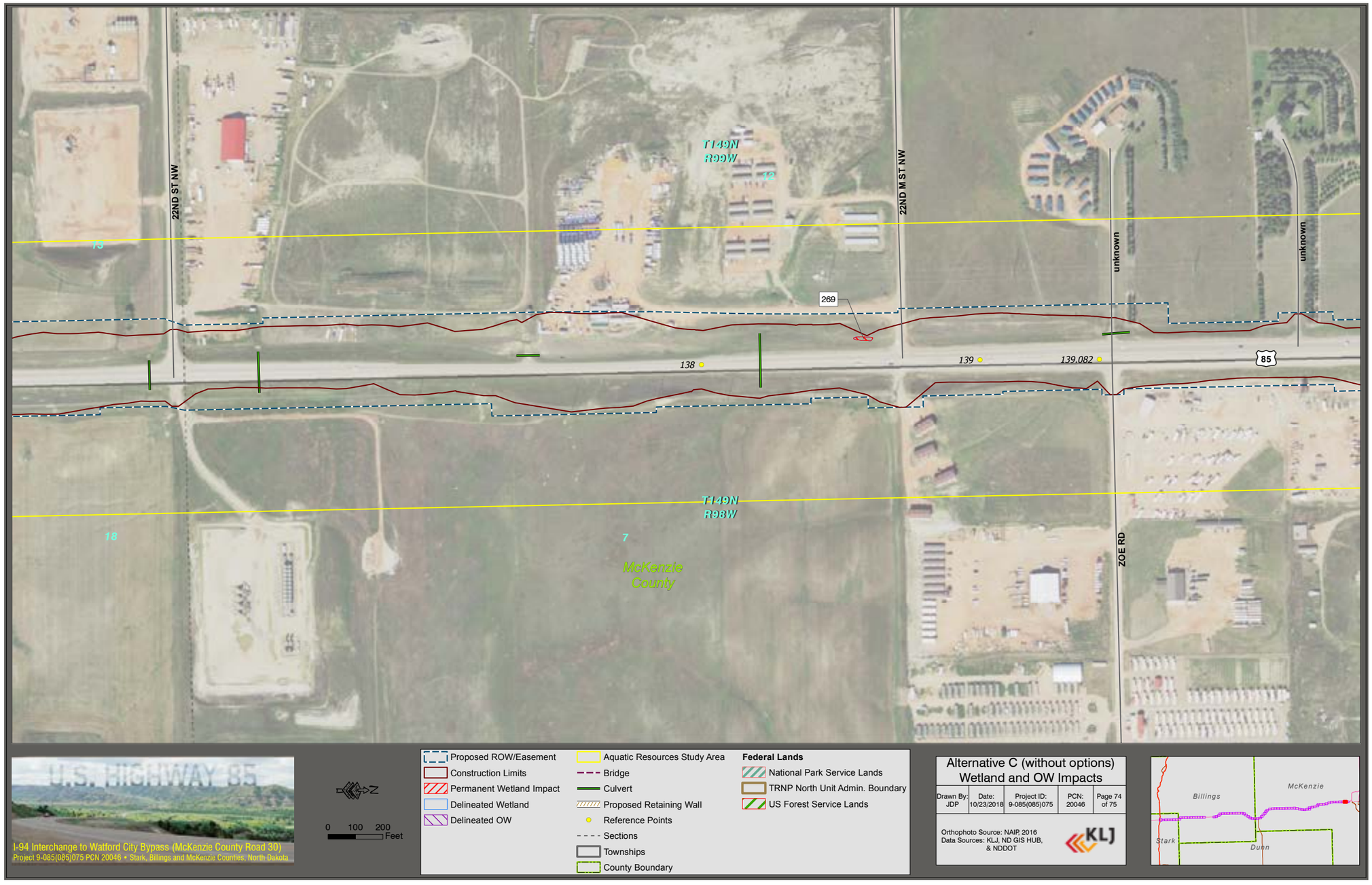
Alternative C (without options) Wetland and OW Impacts

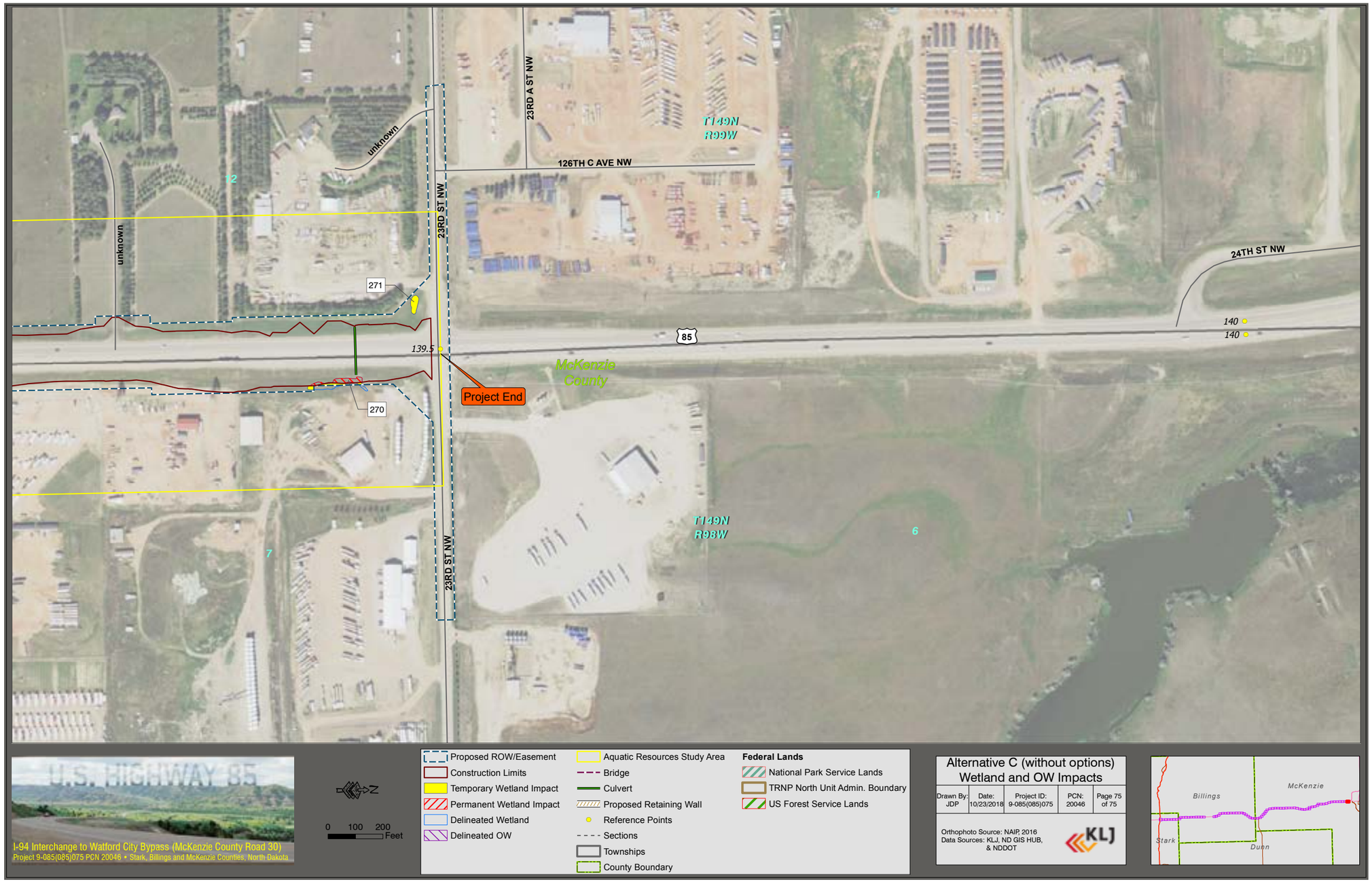
Drawn By:	Date:	Project ID:	PCN:	Page 72 of 75
JDP	10/23/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

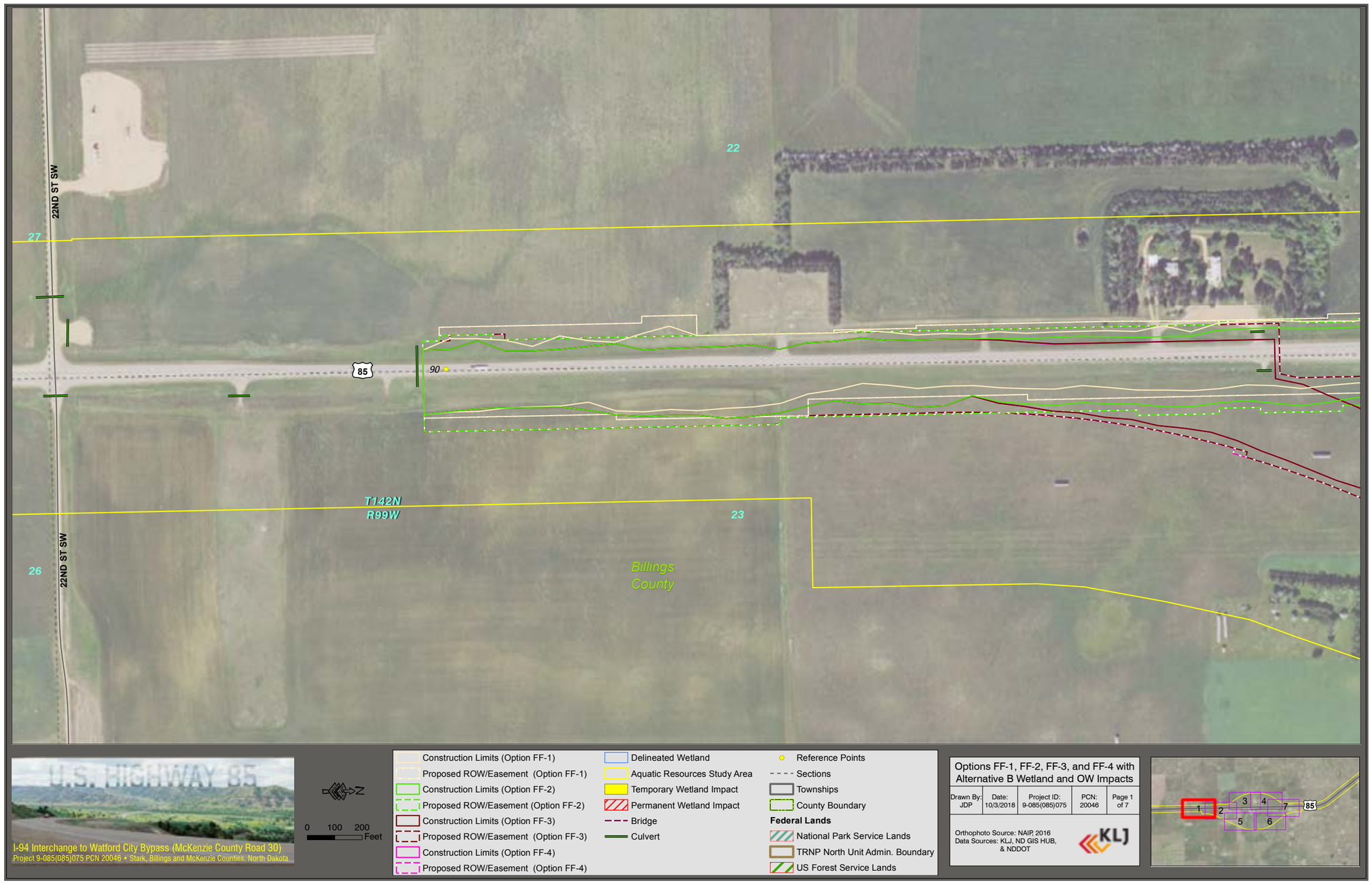
KLJ

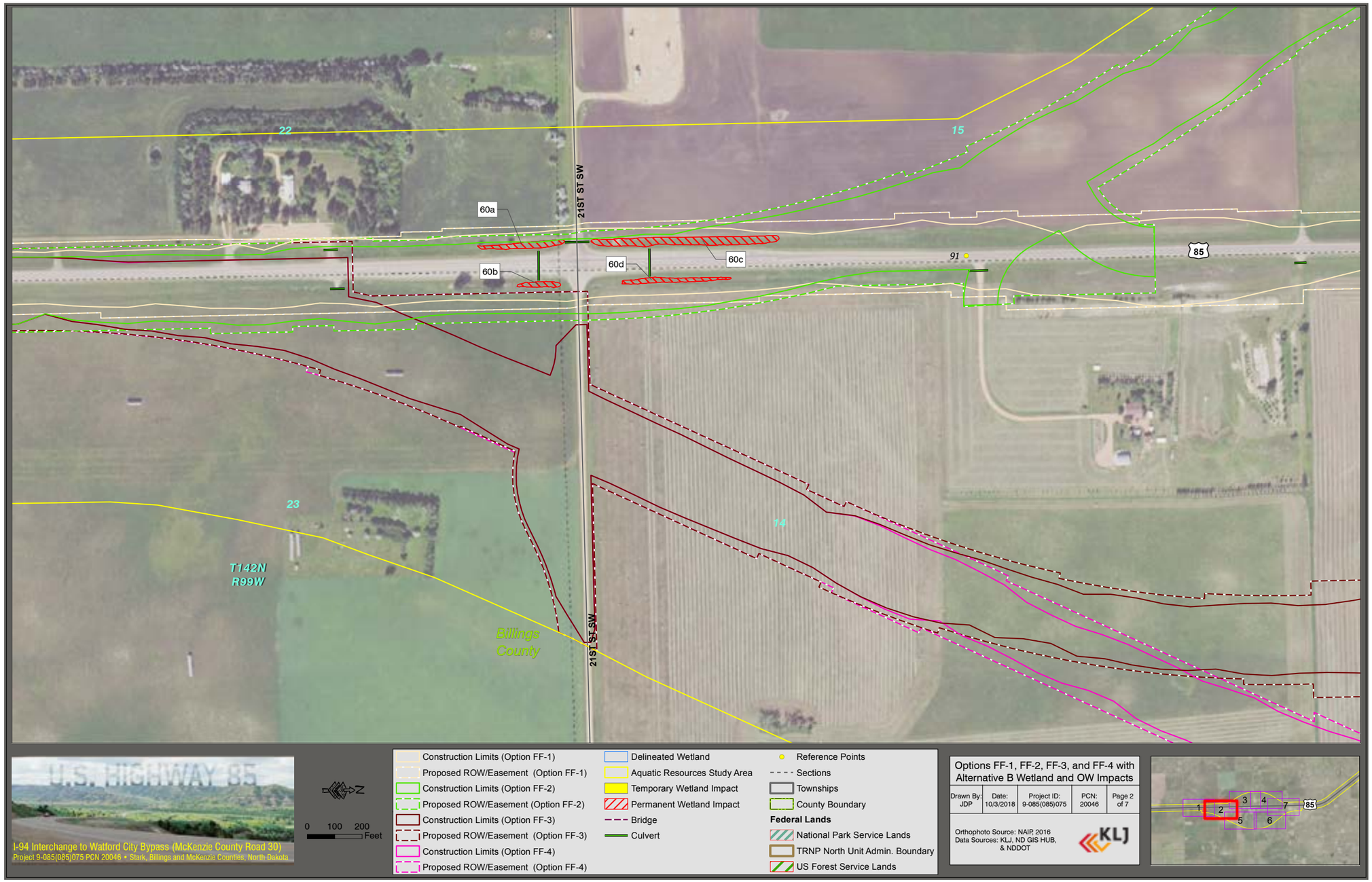

13
T149N
R99W
268
137
85
18
T149N
R98W
McKenzie
County
215T ST NW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/23/2018
Project ID: 9-085(085)075
PCN: 20046
Page 73 of 75
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


22ND ST NW
22ND M ST NW
T149N
R99W
13
18
269
138
139
139.082
unknown
unknown
85
T149N
R98W
18
7
McKenzie
County
ZOE RD
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/23/2018
Project ID: 9-085(085)075
PCN: 20046
Page 74 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn


23RD A ST NW
T149N
R99W
126TH C AVE NW
unknown
12
23RD ST NW
unknown
1
24TH ST NW
271
85
140
140
139.5
McKenzie
County
Project End
270
T149N
R98W
6
7
23RD ST NW
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Proposed ROW/Easement
Construction Limits
Temporary Wetland Impact
Permanent Wetland Impact
Delineated Wetland
Delineated OW
Aquatic Resources Study Area
Bridge
Culvert
Proposed Retaining Wall
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Alternative C (without options)
Wetland and OW Impacts
Drawn By: JDP
Date: 10/23/2018
Project ID: 9-085(085)075
PCN: 20046
Page 75 of 75
Orthophoto Source: NAIP 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
Billings
McKenzie
Stark
Dunn

F.2.3. Options FF-1, FF-2, FF-3, and FF-4 with Alternative B Wetland and Other Waters Impact Maps





0 100 200 Feet

- Construction Limits (Option FF-1)
- Proposed ROW/Easement (Option FF-1)
- Construction Limits (Option FF-2)
- Proposed ROW/Easement (Option FF-2)
- Construction Limits (Option FF-3)
- Proposed ROW/Easement (Option FF-3)
- Construction Limits (Option FF-4)
- Proposed ROW/Easement (Option FF-4)
- Delineated Wetland
- Aquatic Resources Study Area
- Temporary Wetland Impact
- Permanent Wetland Impact
- Bridge
- Culvert
- Reference Points
- Sections
- Townships
- County Boundary

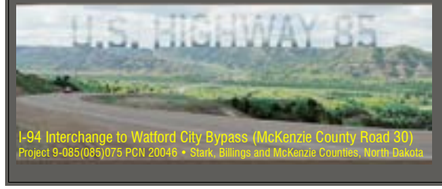
Federal Lands

- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Options FF-1, FF-2, FF-3, and FF-4 with Alternative B Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 2 of 7
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT



I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota

0 100 200 Feet

- Construction Limits (Option FF-1)
- Proposed ROW/Easement (Option FF-1)
- Construction Limits (Option FF-2)
- Proposed ROW/Easement (Option FF-2)
- Delineated Wetland
- Aquatic Resources Study Area
- Temporary Wetland Impact
- Permanent Wetland Impact
- Bridge
- Culvert
- Reference Points
- Sections
- Townships
- County Boundary

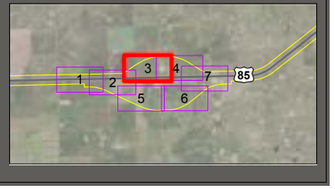
Federal Lands

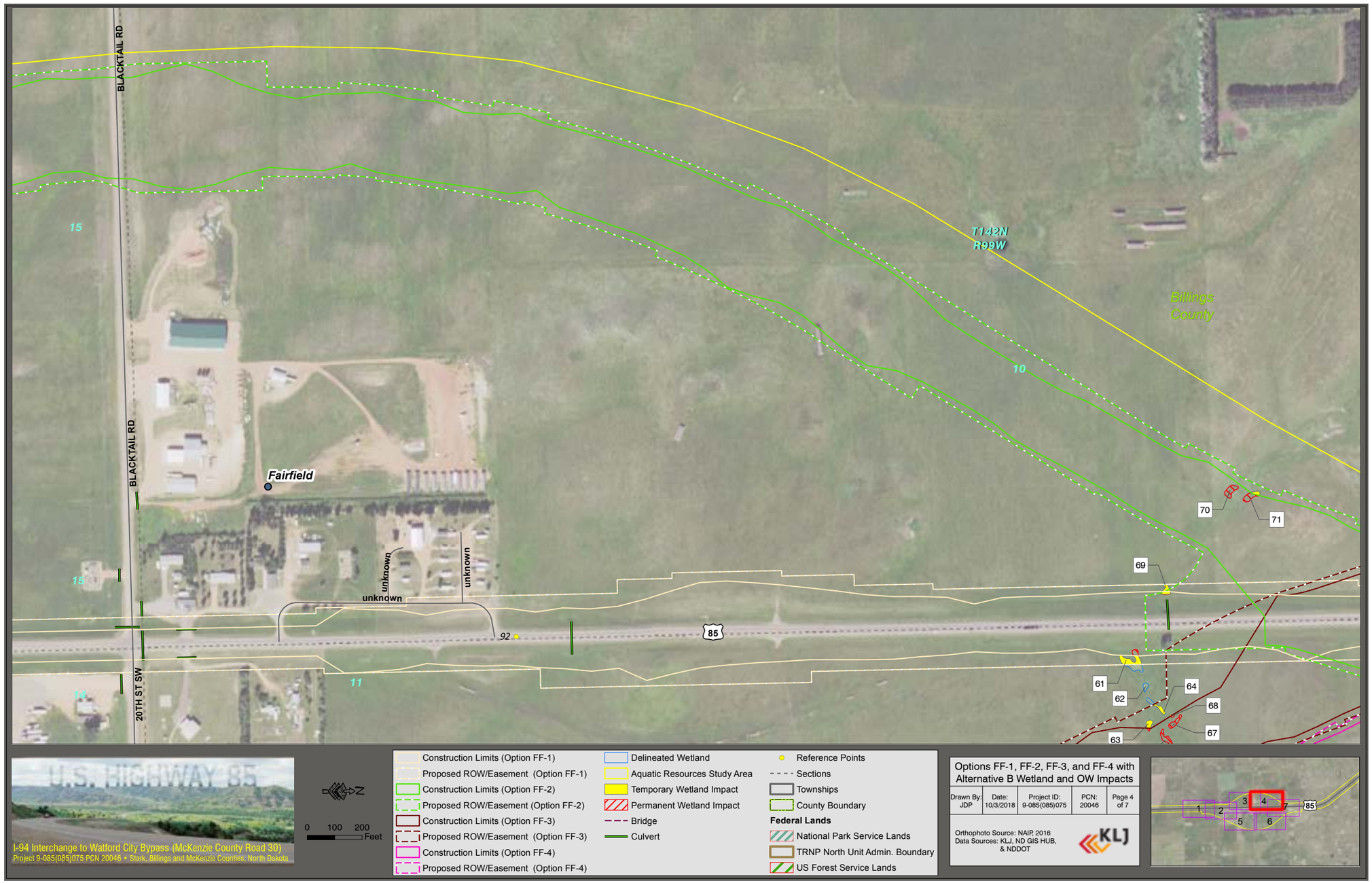
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Options FF-1, FF-2, FF-3, and FF-4 with Alternative B Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page
JDP	10/3/2018	9-085(085)075	20046	3 of 7

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT





I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota

0 100 200 Feet

- Construction Limits (Option FF-1)
- Proposed ROW/Easement (Option FF-1)
- Construction Limits (Option FF-2)
- Proposed ROW/Easement (Option FF-2)
- Construction Limits (Option FF-3)
- Proposed ROW/Easement (Option FF-3)
- Construction Limits (Option FF-4)
- Proposed ROW/Easement (Option FF-4)
- Delineated Wetland
- Aquatic Resources Study Area
- Temporary Wetland Impact
- Permanent Wetland Impact
- Bridge
- Culvert
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

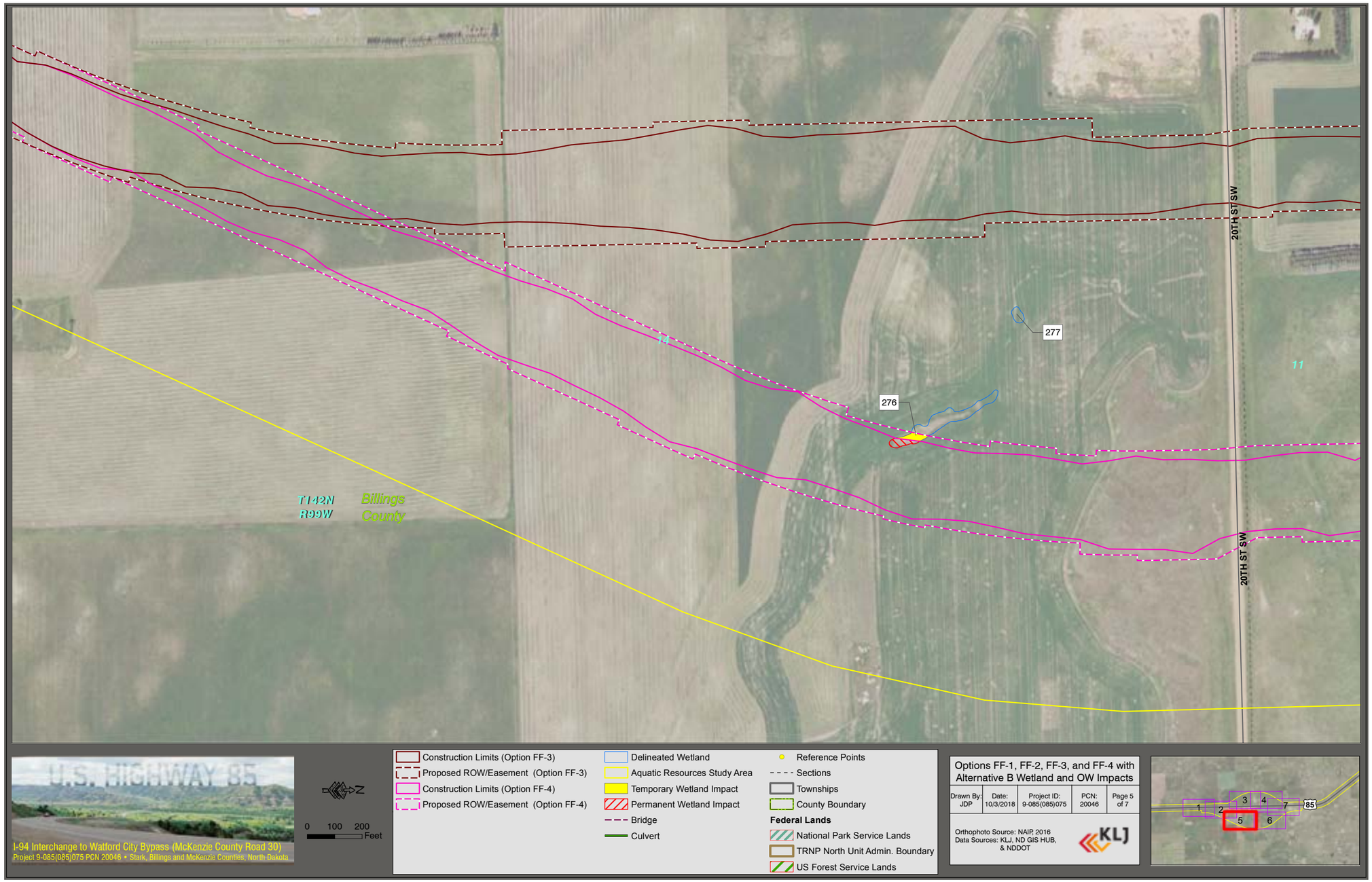
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

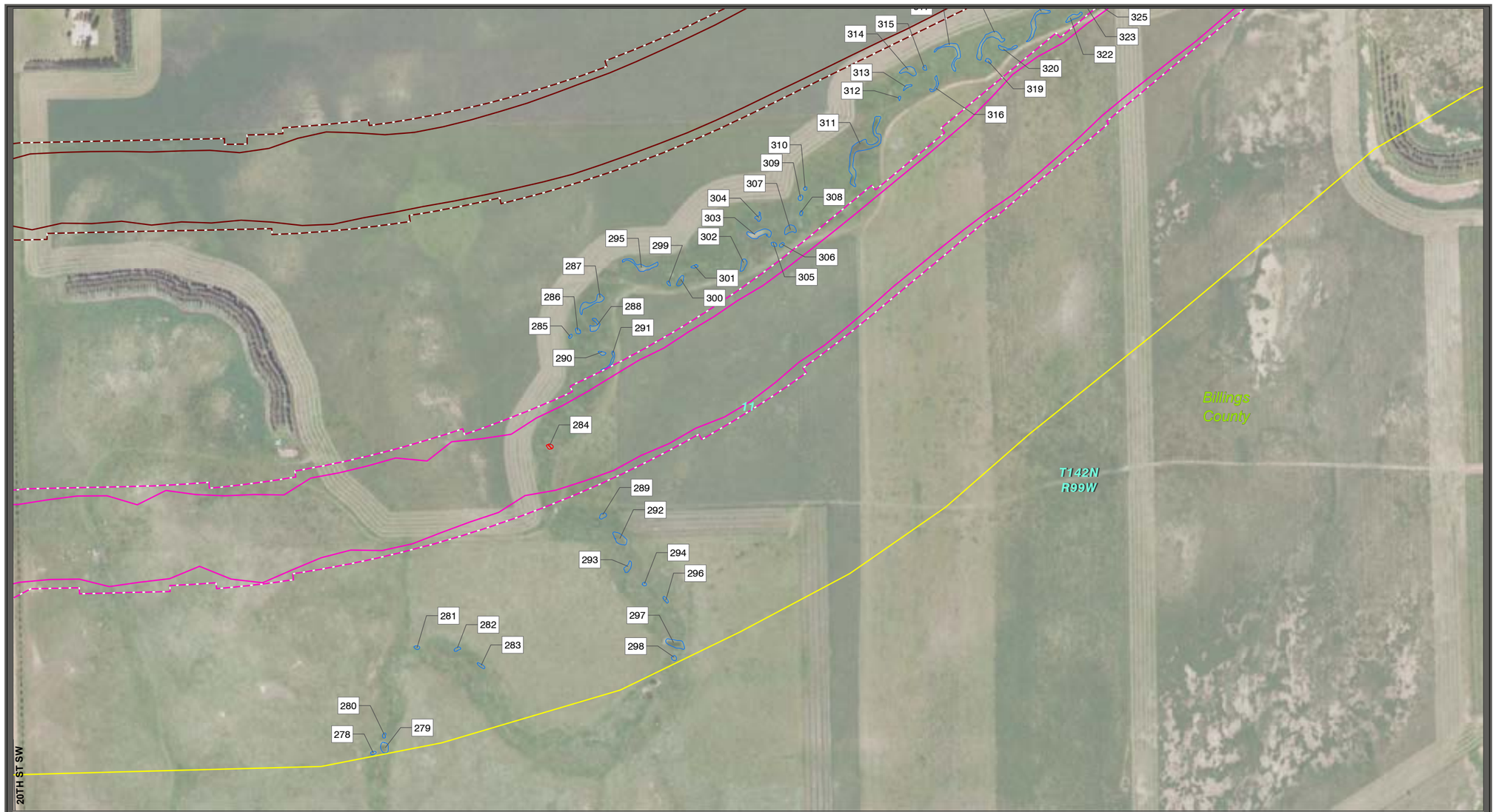
Options FF-1, FF-2, FF-3, and FF-4 with Alternative B Wetland and OW Impacts

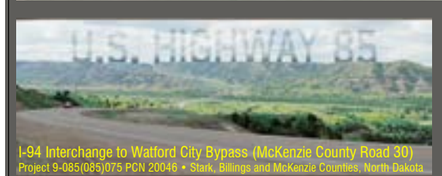
Drawn By:	Date:	Project ID:	PCN:	Page
JDP	10/3/2018	9-085(085)075	20046	4 of 7

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


20TH ST SW
277
276
11
11
T142N
R99W
Billings
County
20TH ST SW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Construction Limits (Option FF-3)
Proposed ROW/Easement (Option FF-3)
Construction Limits (Option FF-4)
Proposed ROW/Easement (Option FF-4)
Delineated Wetland
Aquatic Resources Study Area
Temporary Wetland Impact
Permanent Wetland Impact
Bridge
Culvert
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Options FF-1, FF-2, FF-3, and FF-4 with Alternative B Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 5 of 7
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
1
2
3
4
5
6
7
85





0 100 200 Feet

- Construction Limits (Option FF-3)
- Proposed ROW/Easement (Option FF-3)
- Construction Limits (Option FF-4)
- Proposed ROW/Easement (Option FF-4)
- Delineated Wetland
- Aquatic Resources Study Area
- Temporary Wetland Impact
- Permanent Wetland Impact
- Bridge
- Culvert
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

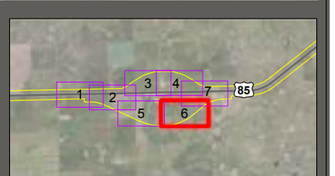
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

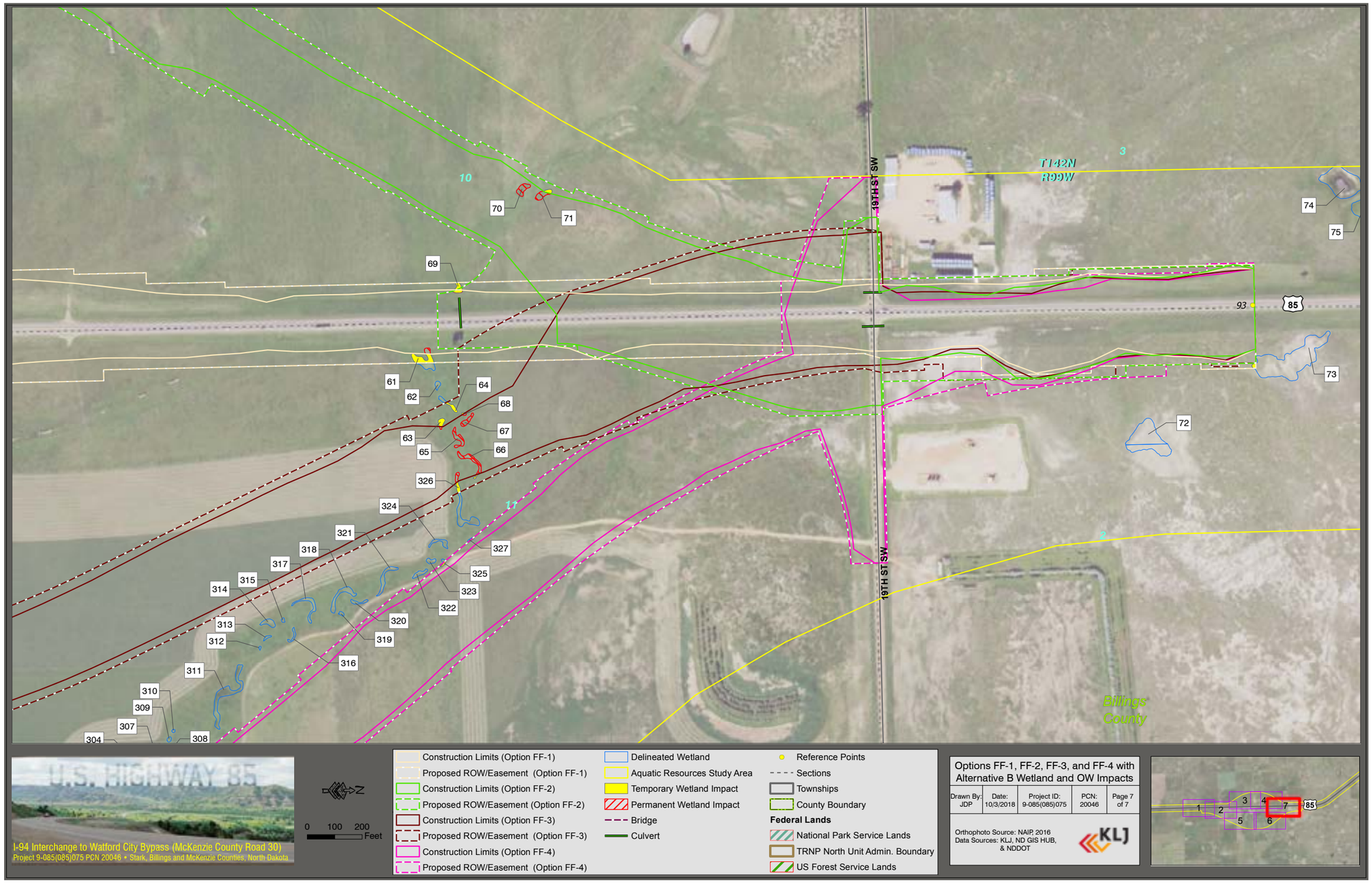
Options FF-1, FF-2, FF-3, and FF-4 with Alternative B Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 6 of 7
JDP	10/3/2018	9-085(085)075	20046	

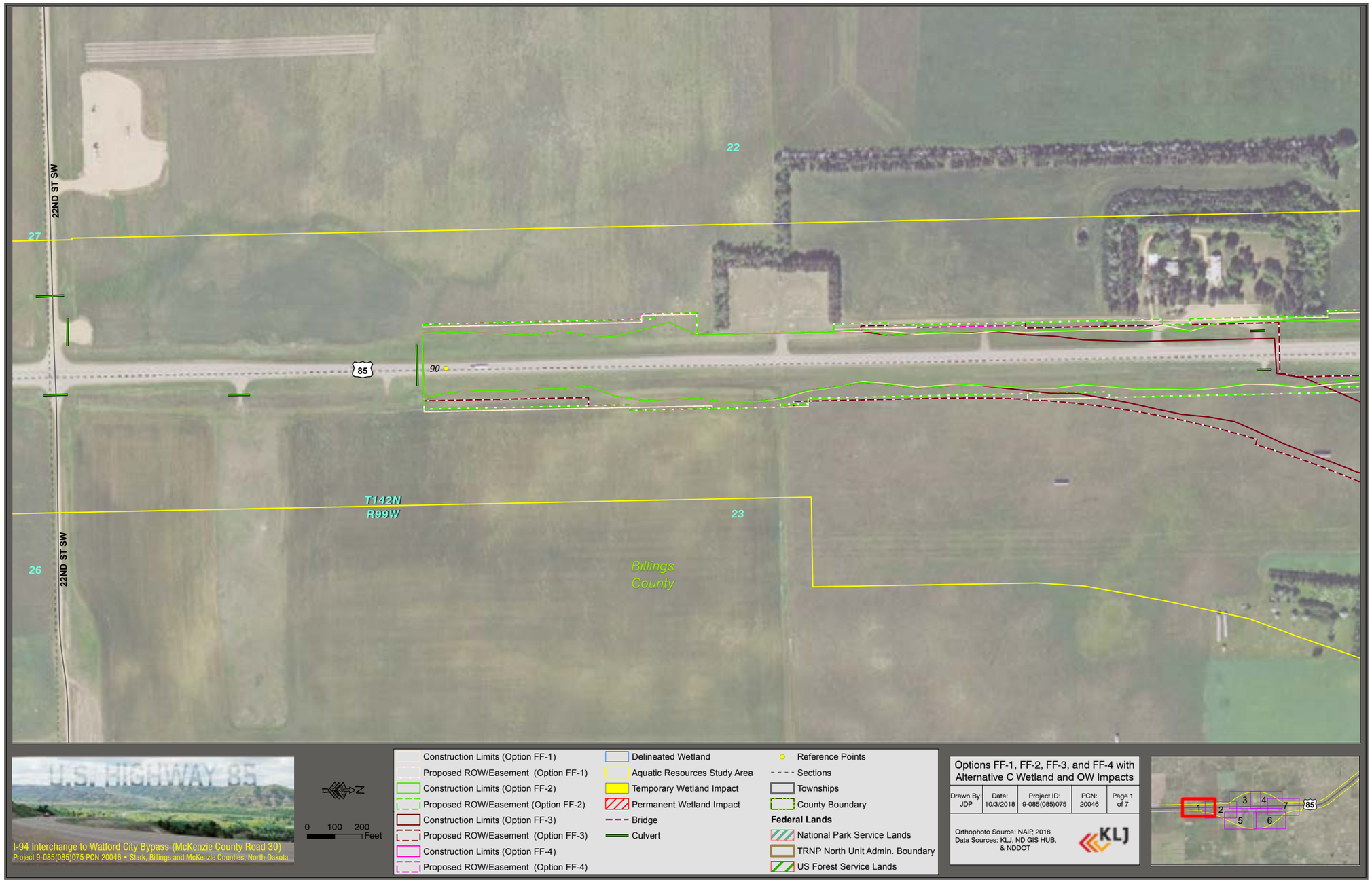
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

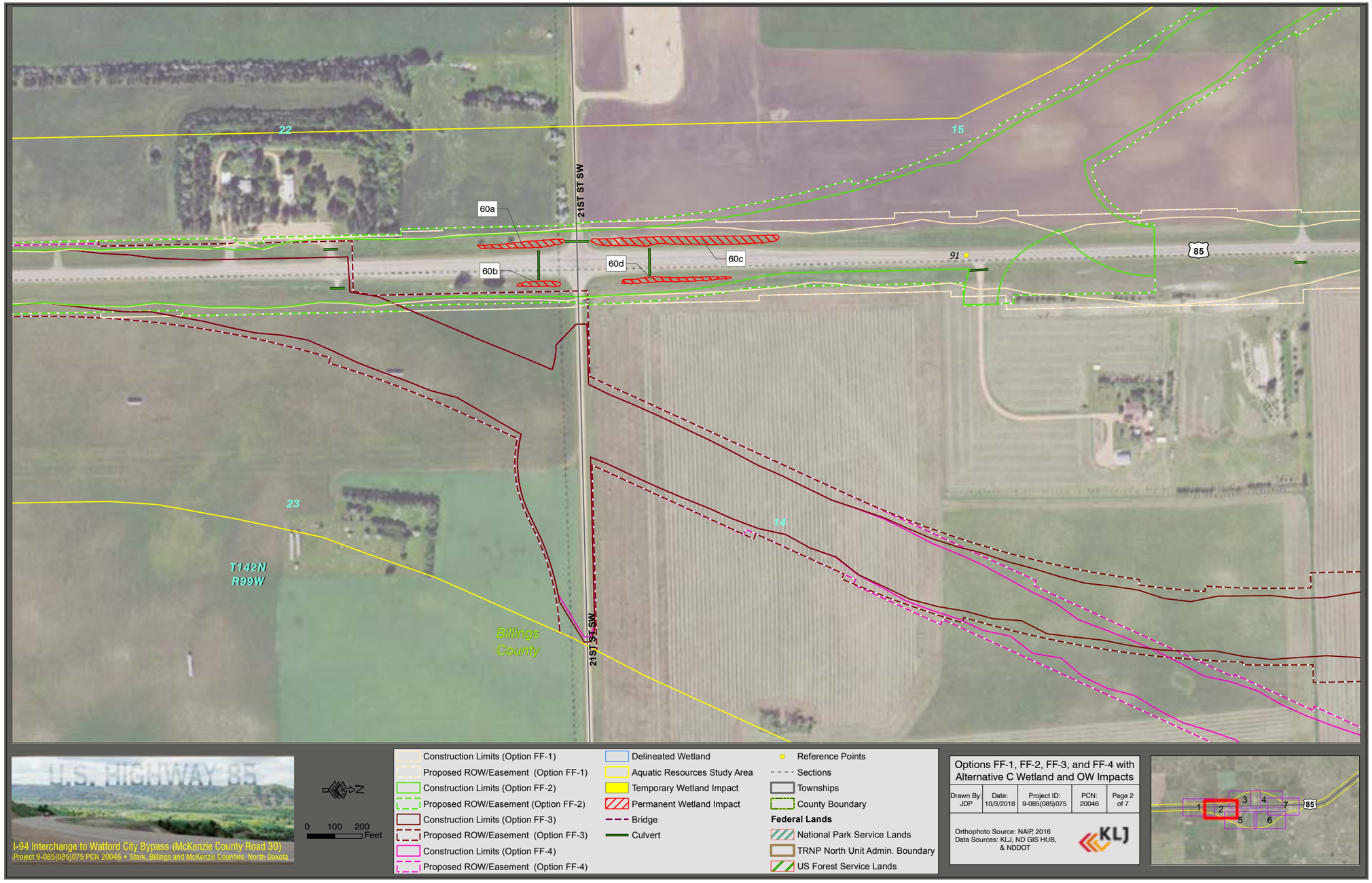
KLJ

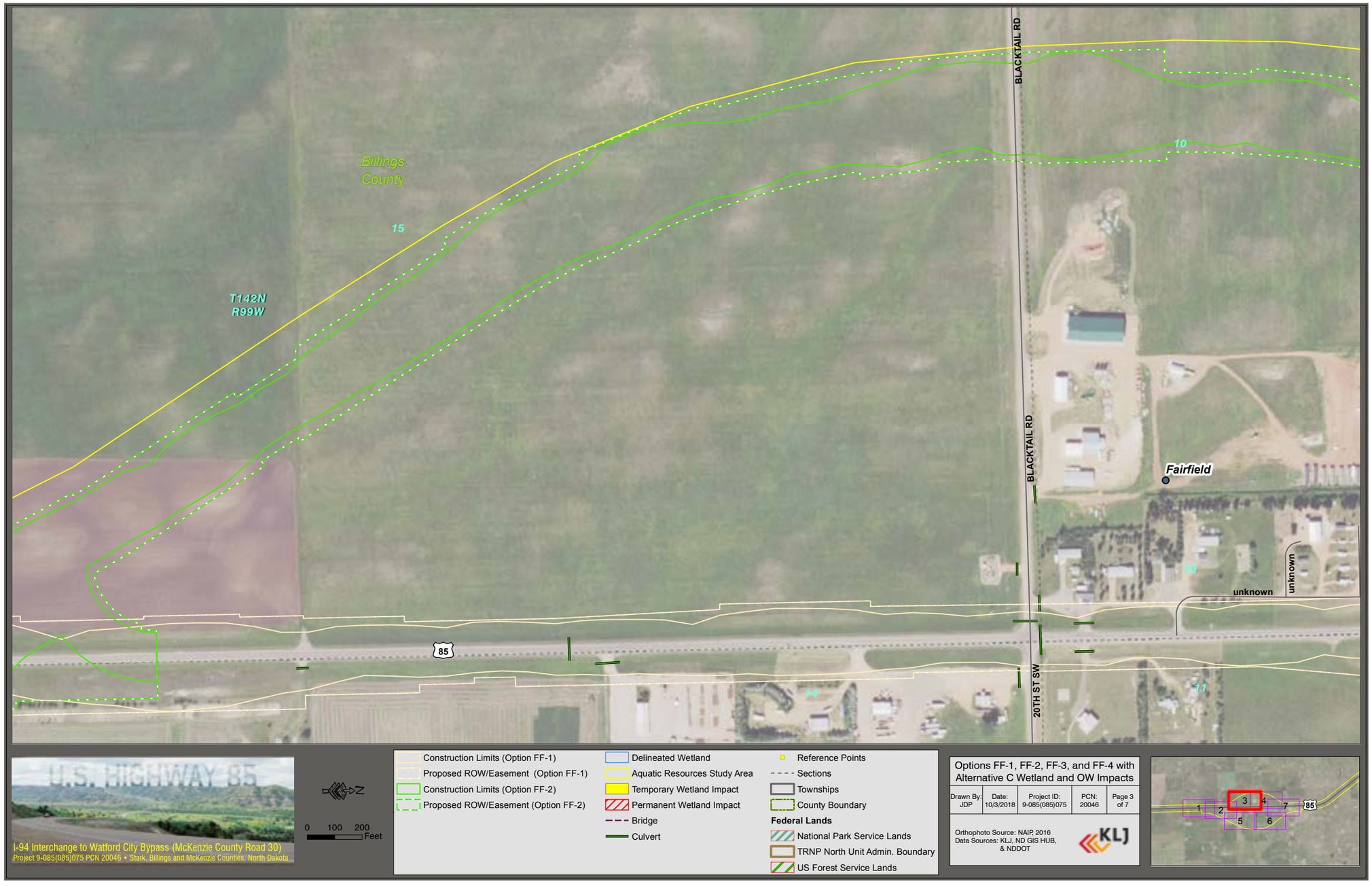



10
3
T142N
R99W
19TH ST SW
70
71
74
75
69
93
85
61
62
64
68
67
63
65
66
73
72
326
11
324
321
318
317
315
314
313
312
327
325
323
322
320
319
316
311
310
309
307
304
308
Billings
County
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200 Feet
Construction Limits (Option FF-1)
Proposed ROW/Easement (Option FF-1)
Construction Limits (Option FF-2)
Proposed ROW/Easement (Option FF-2)
Construction Limits (Option FF-3)
Proposed ROW/Easement (Option FF-3)
Construction Limits (Option FF-4)
Proposed ROW/Easement (Option FF-4)
Delineated Wetland
Aquatic Resources Study Area
Temporary Wetland Impact
Permanent Wetland Impact
Bridge
Culvert
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Options FF-1, FF-2, FF-3, and FF-4 with Alternative B Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 7 of 7
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
1 2 3 4 5 6 7 85

F.2.4. Options FF-1, FF-2, FF-3, and FF-4 with Alternative C Wetland and Other Waters Impact Maps




22
15
21ST ST SW
60a
60b
60c
60d
91
85
23
14
T142N
R99W
Billings
County
21ST ST SW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200
Feet
Construction Limits (Option FF-1)
Proposed ROW/Easement (Option FF-1)
Construction Limits (Option FF-2)
Proposed ROW/Easement (Option FF-2)
Construction Limits (Option FF-3)
Proposed ROW/Easement (Option FF-3)
Construction Limits (Option FF-4)
Proposed ROW/Easement (Option FF-4)
Delineated Wetland
Aquatic Resources Study Area
Temporary Wetland Impact
Permanent Wetland Impact
Bridge
Culvert
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Options FF-1, FF-2, FF-3, and FF-4 with Alternative C Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 2 of 7
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
1
2
3
4
5
6
7
85



0 100 200 Feet

- Construction Limits (Option FF-1)
- Proposed ROW/Easement (Option FF-1)
- Construction Limits (Option FF-2)
- Proposed ROW/Easement (Option FF-2)
- Delineated Wetland
- Aquatic Resources Study Area
- Temporary Wetland Impact
- Permanent Wetland Impact
- Bridge
- Culvert
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

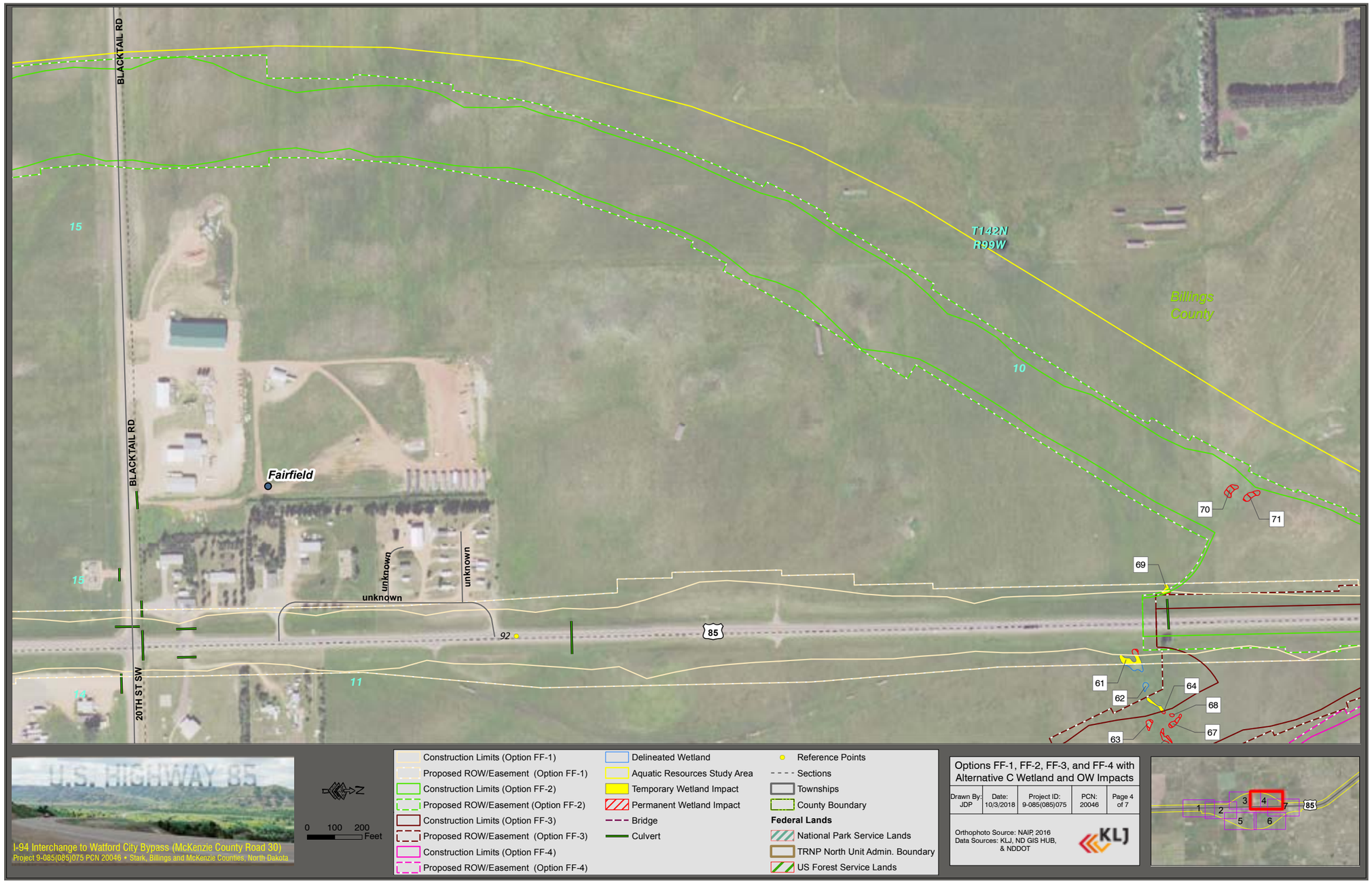
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

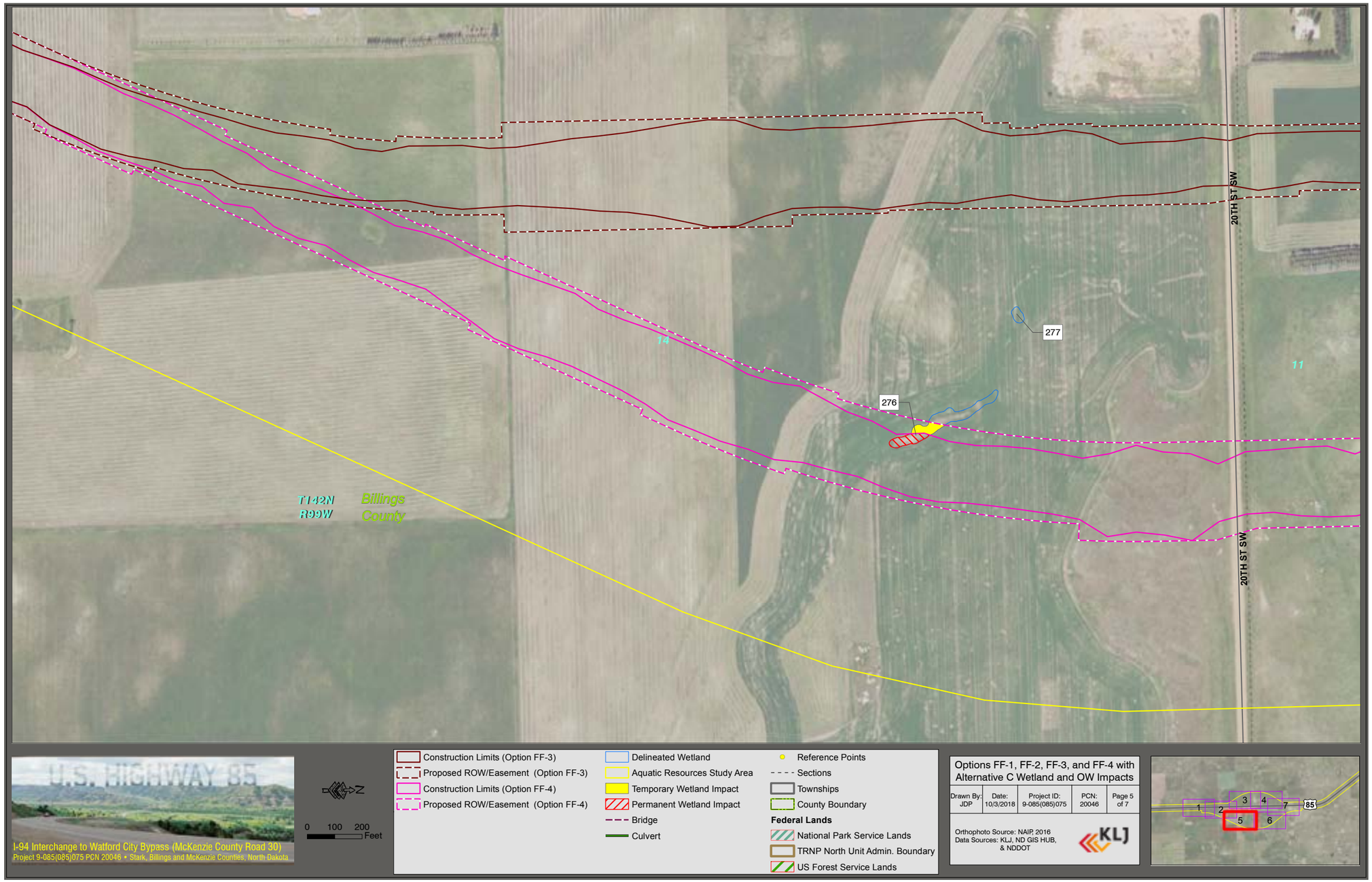
Options FF-1, FF-2, FF-3, and FF-4 with Alternative C Wetland and OW Impacts

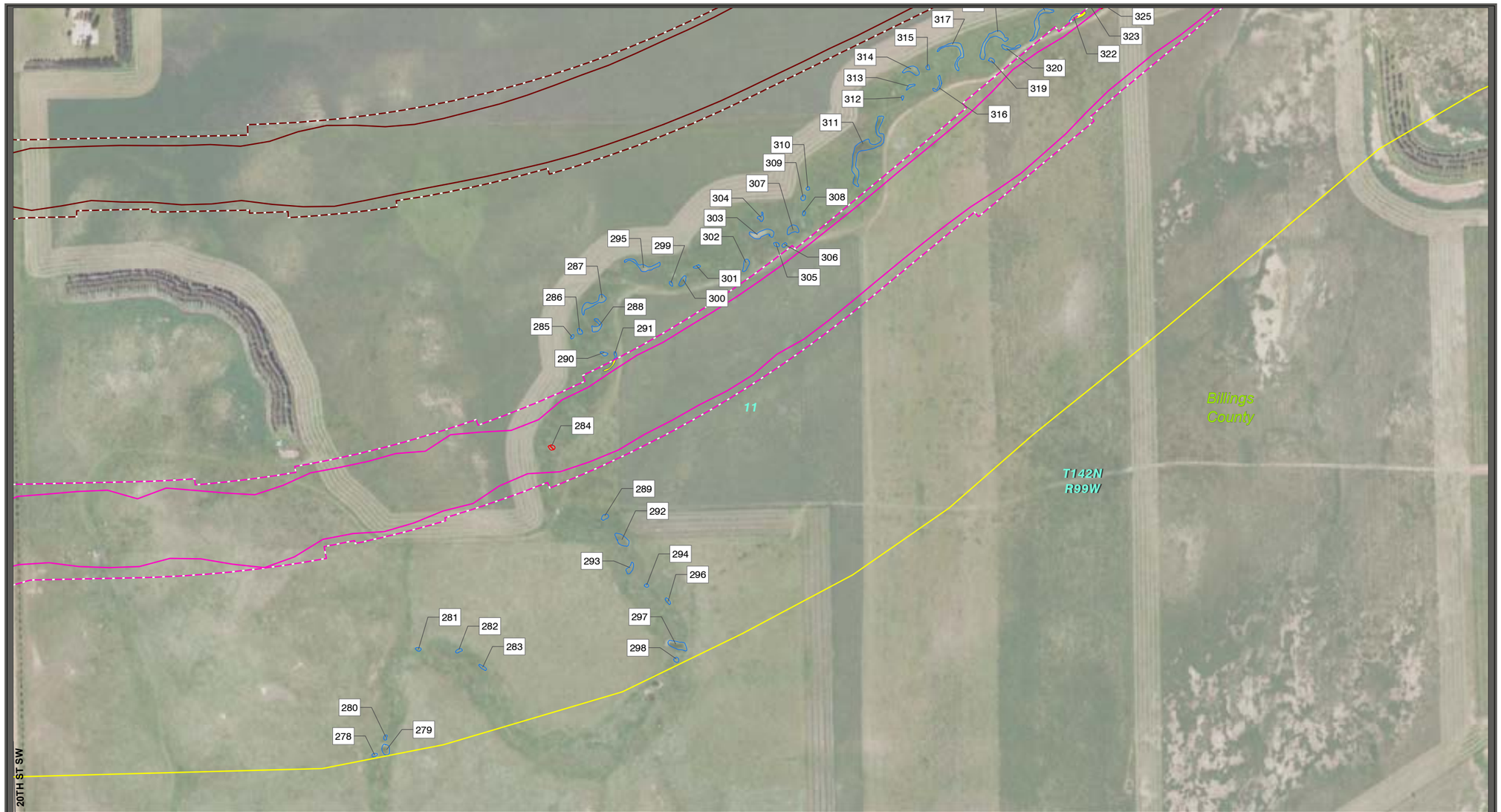
Drawn By:	Date:	Project ID:	PCN:	Page 3 of 7
JDP	10/3/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ


BLACKTAIL RD
20TH ST SW
15
14
11
10
T142N
R99W
Billings
County
Fairfield
unknown
unknown
unknown
92
85
70
71
69
61
62
63
64
68
67
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
N
0 100 200 Feet
Construction Limits (Option FF-1)
Proposed ROW/Easement (Option FF-1)
Construction Limits (Option FF-2)
Proposed ROW/Easement (Option FF-2)
Construction Limits (Option FF-3)
Proposed ROW/Easement (Option FF-3)
Construction Limits (Option FF-4)
Proposed ROW/Easement (Option FF-4)
Delineated Wetland
Aquatic Resources Study Area
Temporary Wetland Impact
Permanent Wetland Impact
Bridge
Culvert
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Options FF-1, FF-2, FF-3, and FF-4 with Alternative C Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 4 of 7
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
1 2 3 4 5 6 7 85


20TH ST SW
277
276
14
11
T142N
R99W
Billings
County
20TH ST SW
U.S. HIGHWAY 85
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200
Feet
Construction Limits (Option FF-3)
Proposed ROW/Easement (Option FF-3)
Construction Limits (Option FF-4)
Proposed ROW/Easement (Option FF-4)
Delineated Wetland
Aquatic Resources Study Area
Temporary Wetland Impact
Permanent Wetland Impact
Bridge
Culvert
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Options FF-1, FF-2, FF-3, and FF-4 with Alternative C Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 5 of 7
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT
KLJ
1
2
3
4
5
6
7
85



I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota

N

0 100 200 Feet

- Construction Limits (Option FF-3)
- Proposed ROW/Easement (Option FF-3)
- Construction Limits (Option FF-4)
- Proposed ROW/Easement (Option FF-4)
- Delineated Wetland
- Aquatic Resources Study Area
- Temporary Wetland Impact
- Permanent Wetland Impact
- Bridge
- Culvert
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

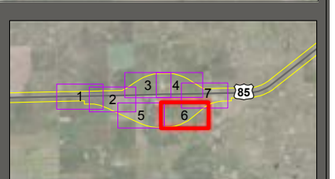
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

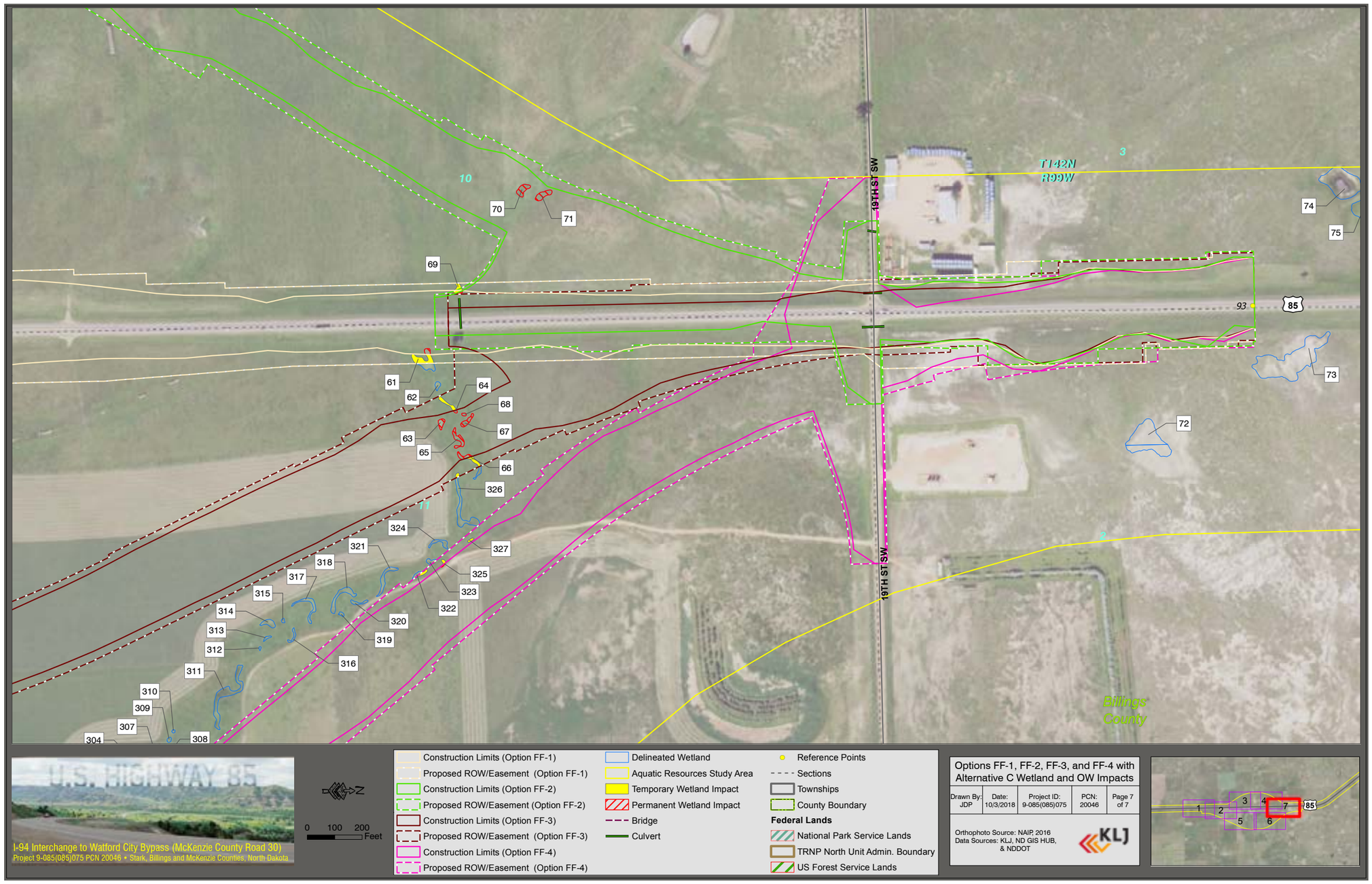
Options FF-1, FF-2, FF-3, and FF-4 with Alternative C Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 6 of 7
JDP	10/3/2018	9-085(085)075	20046	

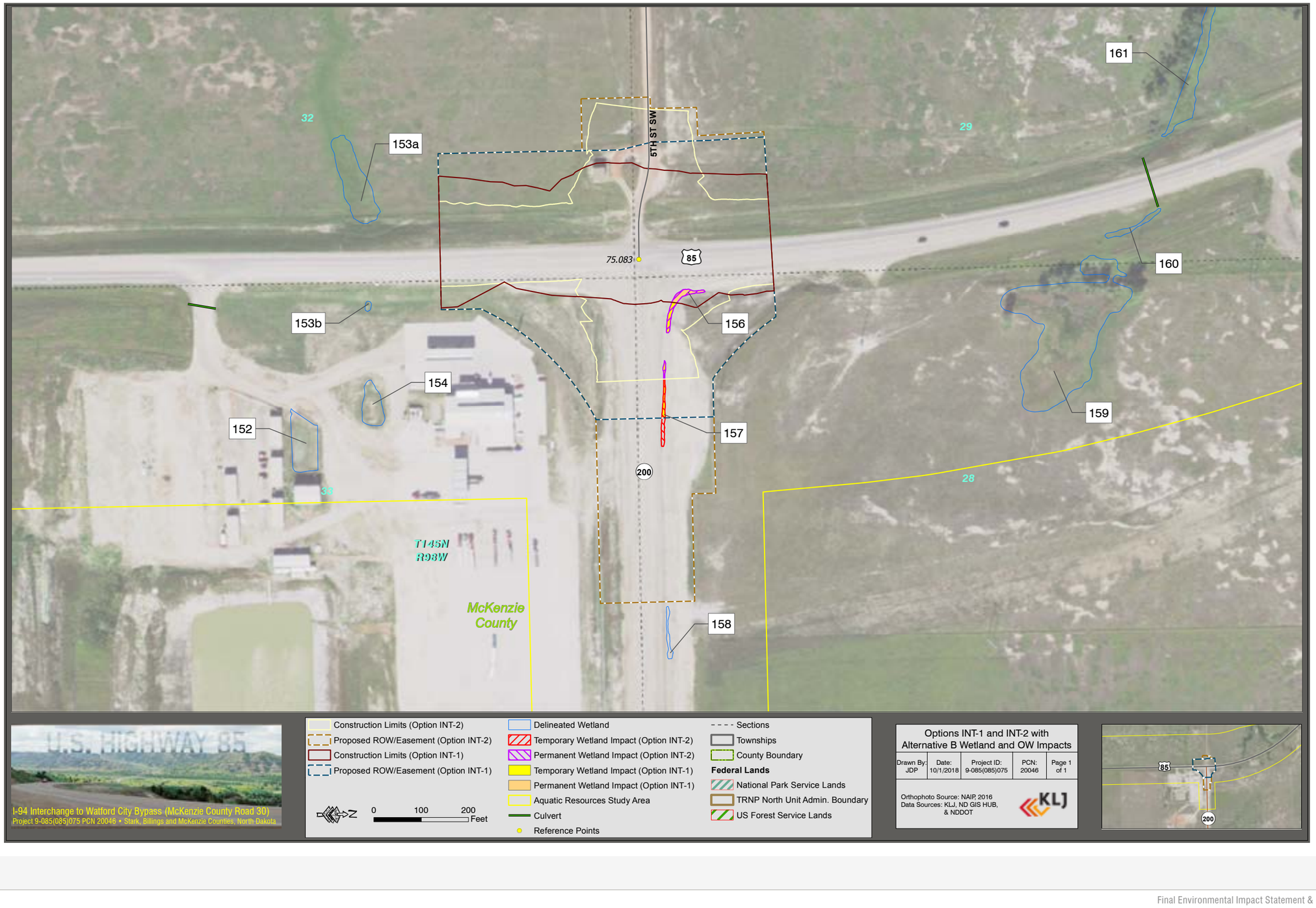
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ

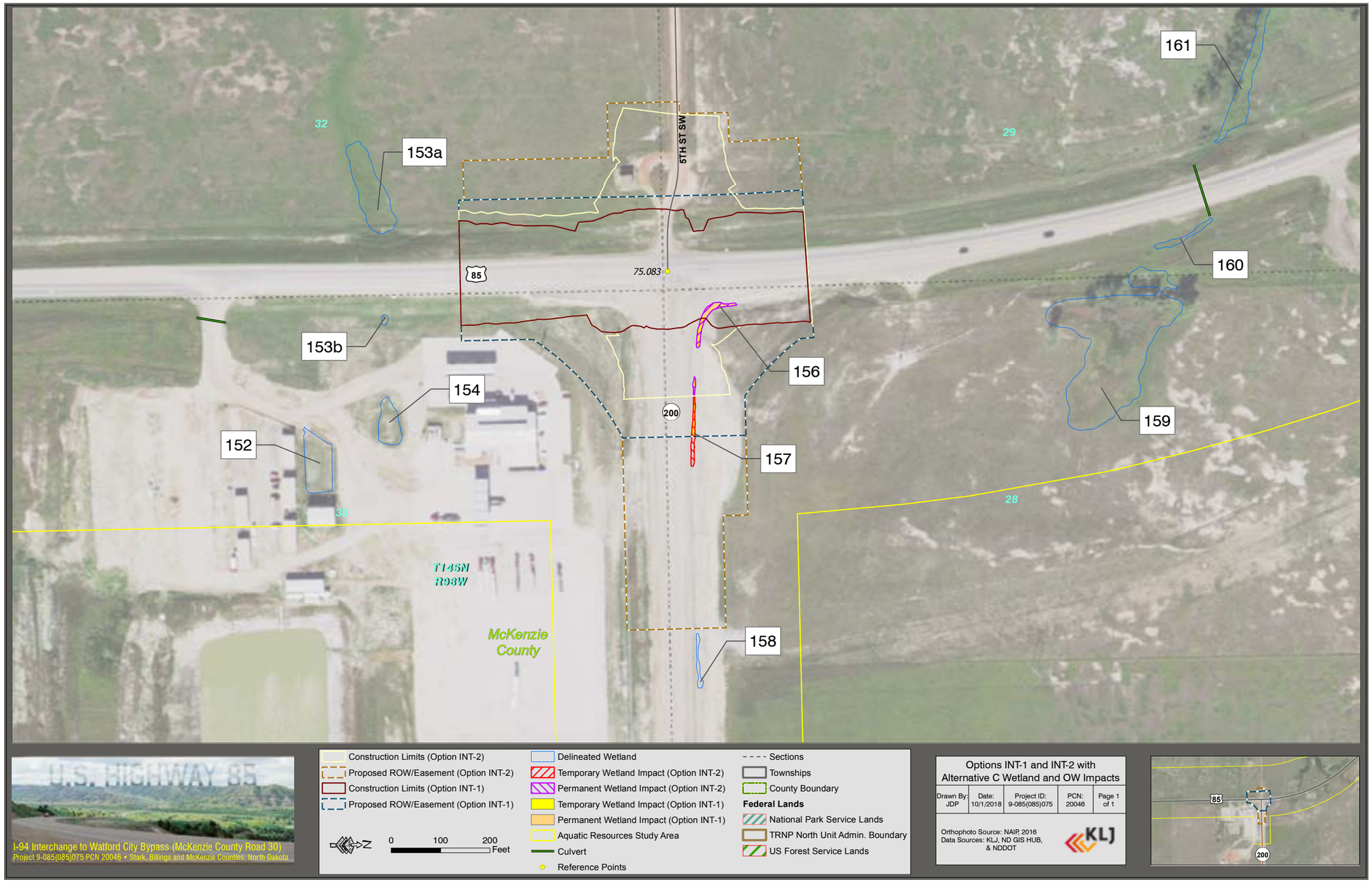



10
3
T142N
R99W
19TH ST SW
19TH ST SW
93
85
Billings
County
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
304
307
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
I-94 Interchange to Watford City Bypass (McKenzie County Road 30)
Project 9-085(085)075 PCN 20046 • Stark, Billings and McKenzie Counties, North Dakota
0 100 200 Feet
Construction Limits (Option FF-1)
Proposed ROW/Easement (Option FF-1)
Construction Limits (Option FF-2)
Proposed ROW/Easement (Option FF-2)
Construction Limits (Option FF-3)
Proposed ROW/Easement (Option FF-3)
Construction Limits (Option FF-4)
Proposed ROW/Easement (Option FF-4)
Delineated Wetland
Aquatic Resources Study Area
Temporary Wetland Impact
Permanent Wetland Impact
Bridge
Culvert
Reference Points
Sections
Townships
County Boundary
Federal Lands
National Park Service Lands
TRNP North Unit Admin. Boundary
US Forest Service Lands
Options FF-1, FF-2, FF-3, and FF-4 with Alternative C Wetland and OW Impacts
Drawn By: JDP
Date: 10/3/2018
Project ID: 9-085(085)075
PCN: 20046
Page 7 of 7
Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDOT
KLJ
1 2 3 4 5 6 7 85

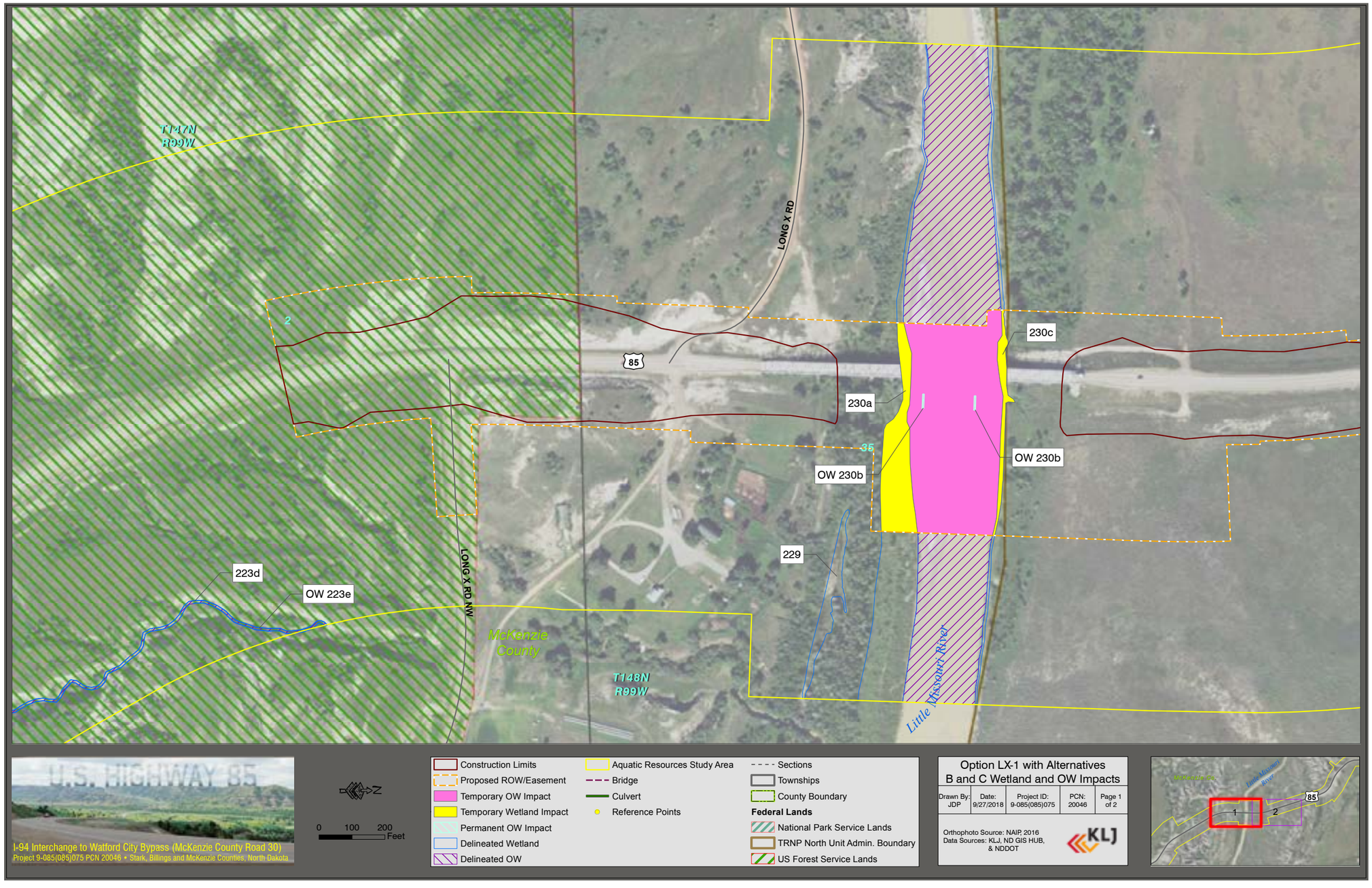
F.2.5. Options INT-1 and INT-2 with Alternative B Wetland and Other Waters Impact Maps

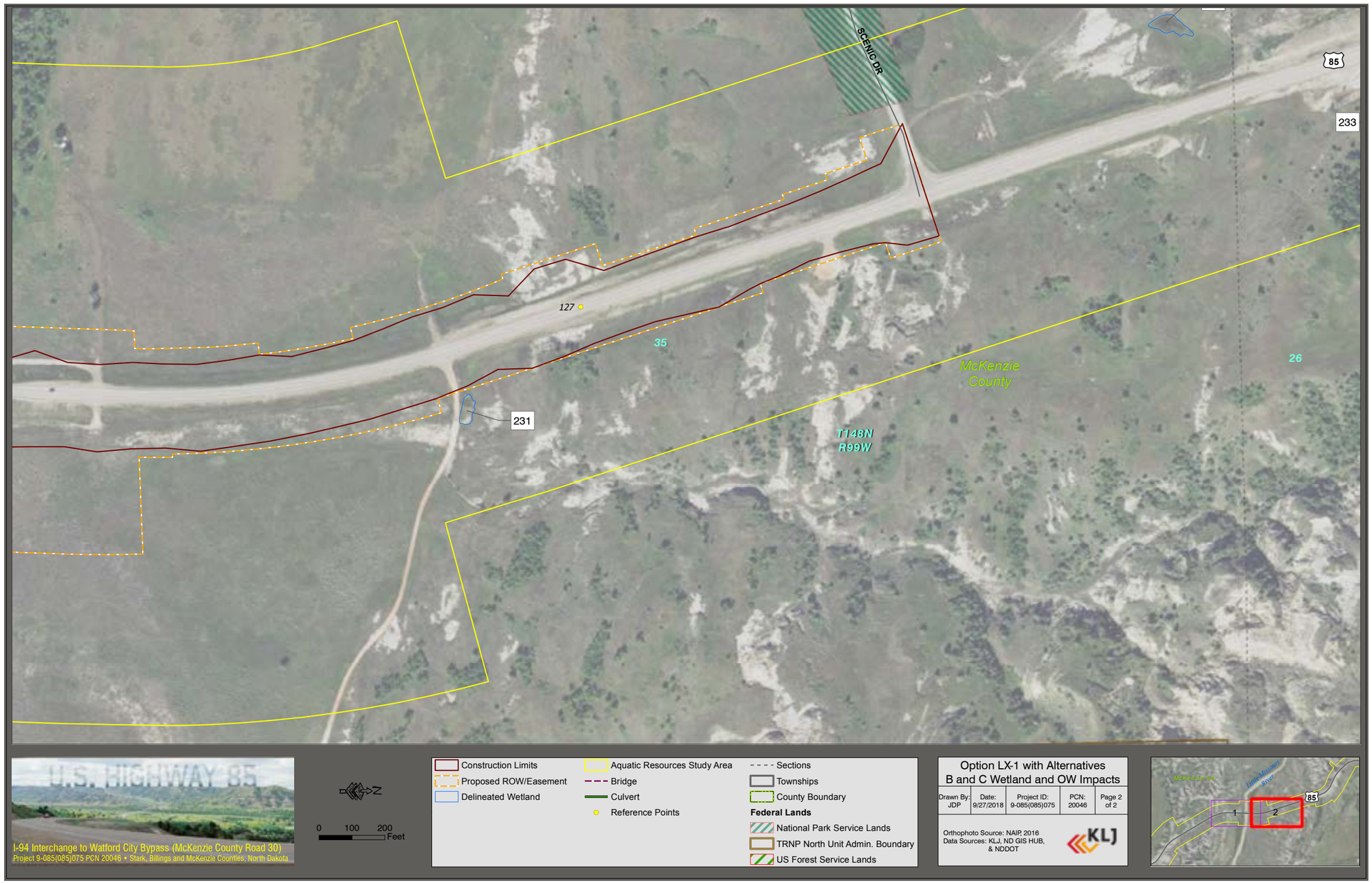


F.2.6. Options INT-1 and INT-2 with Alternative C Wetland and Other Waters Impact Maps



F.2.7. Option LX-1 with Alternatives B and C Wetland and Other Waters Impact Maps





0 100 200 Feet

- Construction Limits
- Proposed ROW/Easement
- Delineated Wetland
- Aquatic Resources Study Area
- Bridge
- Culvert
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

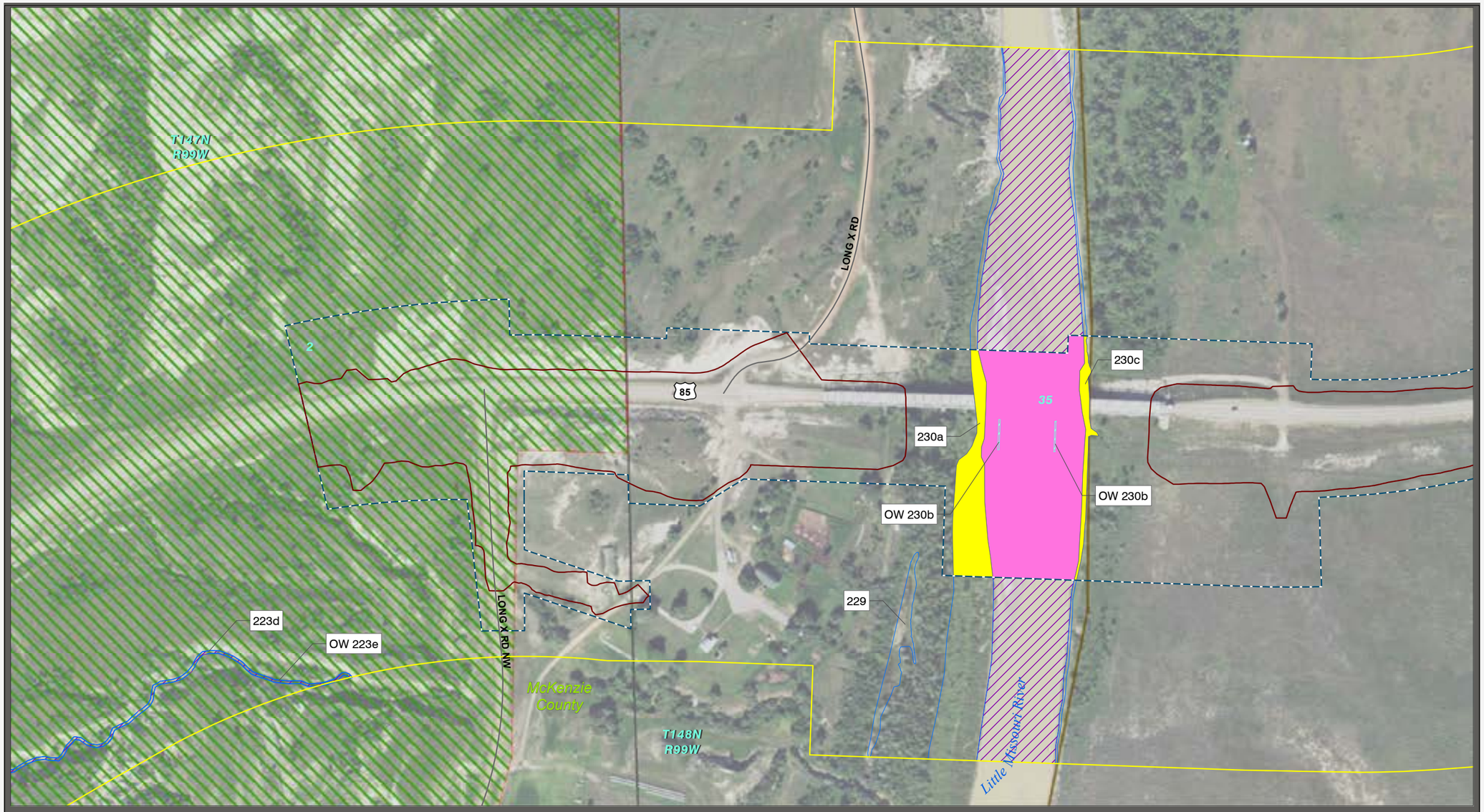
Option LX-1 with Alternatives B and C Wetland and OW Impacts

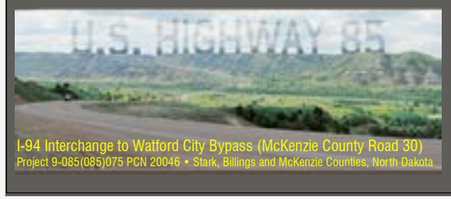
Drawn By:	Date:	Project ID:	PCN:	Page 2 of 2
JDP	9/27/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ

F.2.8. Options LX-2 and LX-3 with Alternatives B and C Wetland and Other Waters Impact Maps





N

0 100 200 Feet

- Construction Limits
- Proposed ROW/Easement
- Temporary OW Impact
- Temporary Wetland Impact
- Permanent OW Impact
- Delineated Wetland
- Delineated OW
- Aquatic Resources Study Area
- Bridge
- Culvert
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

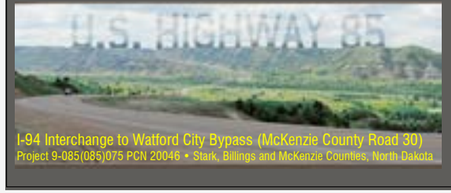
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Options LX-2 and LX-3 with Alternatives B & C Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 1 of 2
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



N

0 100 200 Feet

- Construction Limits
- Proposed ROW/Easement
- Temporary Wetland Impact
- Permanent Wetland Impact
- Delineated Wetland
- Aquatic Resources Study Area
- Bridge
- Culvert
- Reference Points
- Sections
- Townships
- County Boundary

Federal Lands

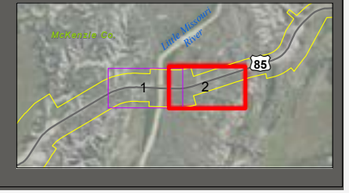
- National Park Service Lands
- TRNP North Unit Admin. Boundary
- US Forest Service Lands

Options LX-2 and LX-3 with Alternatives B & C Wetland and OW Impacts

Drawn By:	Date:	Project ID:	PCN:	Page 2 of 2
JDP	10/1/2018	9-085(085)075	20046	

Orthophoto Source: NAIP, 2016
Data Sources: KLJ, ND GIS HUB, & NDDOT

KLJ



F.3. Section 404(b)(1) Evaluation

SECTION 404(b)(1)ALTERNATIVES ANALYSIS

NWO-2015-00767-BIS

U.S. Highway 85

I-94 Interchange to Watford City Bypass

U.S. Army Corps of Engineers

Omaha District

North Dakota Regulatory Office

U.S. Highway 85, I-94 Interchange to Watford City Bypass
SECTION 404(b)(1) ALTERNATIVES ANALYSIS

CONTENTS

U.S. Highway 85, I-94 Interchange to Watford City Bypass
SECTION 404(b)(1) ALTERNATIVES ANALYSIS

ACRONYMS

Alternative	Alt
average daily traffic	ADT
American Association of State Highway and Transportation Officials	AASHTO
A-weighted decibels	dBA
Best Management Practices	BMPs
Bureau of Economic Analysis	BEA
Clean Water Act	CWA
Conservations Measures	CM
Corrugated steel pipe	CSP
Council for Environmental Quality	CEQ
Department of the Army	DA
Draft Environmental Impact Statement	DEIS
Endangered Species Act	ESA
Energy Information Administration	EIA
Environmental Impact Statement	EIS
Federal Highway Administration	FHWA
Feet	FT
Final Environmental Impact Statement	FEIS
Greenhouse Gas	GHG
Horizontal Directional Drilling	HDD
Hydrological Unit Code	HUC
I	Interstate
Interactive Highway Safety Design Model	IHSDM
Land and Resource Management Plans	LRMP
least environmentally damaging practicable alternative	LEDPA
Level of Service	LOS
Little Missouri National Grasslands	LMNG
Little Missouri River	LMR
Management Area	MA
Memorandum of Agreement	MOA
million vehicle miles traveled	MVMT
Mountain Standard Time	MST
National Ambient Air Quality Standards	NAAQS
National Environmental Policy Act	NEPA
National Forest System	NFS

National Highway System	NHS
National Park Service	NPS
National Register of Historic Places	NRHP
Noise Abatement Criteria	NAC
North Dakota	ND
North Dakota Department of Transportation	NDDOT
North Dakota Game and Fish Department	NDGF
North Dakota Highway 200	ND-200
North Dakota Highway Patrol	NDHP
North Dakota Industrial Commission	NDIC
North Dakota State Historic Preservation Office	NDSHPO
North Dakota Tourism Department	NDTD
Particulate Matter	PM
Programmatic Biological Assessment	PBA
Record of Decision	ROD
Reference Point (on roadway)	RP
Reinforced concrete box	RCB
Reinforced concrete box culvert	RCBC
Reinforced concrete pipe	RCP
Right of Way	ROW
Safe, Accountable, Flexible, Efficient Transportation Equity Act	SAFETEA-LU
State Ambient Air Quality Standards	SAAQS
State Historical Society of North Dakota	SHSND
Statewide Transportation Improvement Program	STIP
Storm Water Pollution Prevention Plan	SWPPP
Structural plate pipe corrugated	SPPC
Theodore Roosevelt Expressway	TRE
Theodore Roosevelt National Park	TRNP
U.S. Army Corps of Engineers	Corps
U.S. Environmental Protection Agency	EPA
U.S. Forest Service	USFS
U.S. Highway 85 Project	Project
United States Department of Agriculture	USDA
Water Quality Certification	WQC
Waters of the United States	WOUS

1. INTRODUCTION

The North Dakota Department of Transportation (NDDOT), in conjunction with the Federal Highway Administration (FHWA), is proposing to re-construct the U.S. Highway 85, I-94 Interchange to Watford City Bypass project between Belfield and Watford City, North Dakota. The approximately 62 miles of highway will be constructed as a four-lane highway and will replace the existing Long X Bridge crossing of the Little Missouri River. The U.S. Highway 85 corridor has experienced significant increases in traffic volume since 2010, largely due to the increase in oil and gas exploration in the North Dakota Bakken Region.

NDDOT and FHWA have prepared a Draft Environmental Impact Statement (DEIS) for the project, which was released for public comment on May 25, 2018 and ended June 25, 2018. The U.S. Army Corps of Engineers (Corps) participated as a Cooperating Agency and has provided information and comments specific to its expertise and authority.

1.1 SECTION 404(B)(1) REGULATORY BACKGROUND

The purpose of the Guidelines developed by the U.S. Environmental Protection Agency (EPA) pursuant to Section 404(b)(1) of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of waters of the United States (WOUS) through the control of discharges of dredged and fill material. 40 Code of Federal Regulations (CFR) § 230.1(a). Fundamental to these Section 404(b)(1) Guidelines is the precept that dredged or fill material should not be discharged into the aquatic ecosystem, unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern. 40 CFR § 230.1(c).

Section 404 of the CWA authorizes the Corps to issue permits for the discharge of dredged or fill materials into WOUS, defined at 33 CFR Part 328, which includes wetlands, coastal and inland waters, lakes, rivers, and streams, including adjacent wetlands and tributaries.

U.S. Highway 85, I-94 Interchange to Watford City Bypass
SECTION 404(b)(1) ALTERNATIVES ANALYSIS

The Section 404(b)(1) Guidelines (40 CFR Part 230 et seq.) are a significant part of the substantive environmental criteria used by the Corps to evaluate permit applications involving the discharge of dredged or fill material into WOUS. The Section 404(b)(1) Guidelines at 40 CFR § 230.10 impose four restrictions which must be satisfied in order to make a finding that a proposed discharge of dredged or fill material complies with the Section 404(b)(1) Guidelines. The Section 404(b)(1) Guidelines generally state that no discharge of dredged or fill material shall be permitted if:

1. There is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences;

2. The discharge would:

   a) Cause or contribute, after consideration of disposal site dilution and dispersion, to violations of any applicable State water quality standard;

   b) Violate any applicable toxic effluent standard or prohibition under Section 307 of the CWA;

   c) Jeopardize the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973, as amended, or result in likelihood of the destruction or adverse modification of a habitat which is determined by the Secretary of Interior or Commerce, as appropriate, to be a critical habitat under the Endangered Species Act of 1973, as amended; or

   d) Violate any requirement imposed by the Secretary of Commerce to protect any marine sanctuary designated under title III of the Marine Protection, Research, and Sanctuaries Act of 1972;

3. The discharge would cause or contribute to significant degradation of the WOUS. Findings of significant degradation related to the proposed discharge shall be based upon appropriate factual determinations, evaluations, and tests required by subparts B and G, after consideration of subparts C through F, with

special emphasis on the persistence and permanence of the effects outlined in those subparts;

4. And, unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.

An alternative is practicable "if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purposes." 40 CFR §§ 230.10(a), 230.3(q). "If it is otherwise a practicable alternative, an area not presently owned by an applicant which could reasonably be obtained, utilized, expanded or managed in order to fulfill the basic purpose of the proposed activity may be considered." 40 CFR § 230.10(a)(2).

The term "special aquatic sites," as defined by the Section 404(b)(1) Guidelines, includes "geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values." 40 CFR § 230.3. The Section 404(b)(1) Guidelines specifically name sanctuaries and refuges, wetlands, mud flats, vegetated shallows, coral reefs, and riffle and pool complexes as special aquatic sites. Each of these six special aquatic sites are defined in subpart E of the 404(b)(1) Guidelines.

If the proposed activity would involve a discharge into a special aquatic site, such as a wetland, the Section 404(b)(1) Guidelines distinguish between those projects that are water dependent and those that are not. A water-dependent project is one that requires access to or proximity to or siting within a special aquatic site to achieve its basic purpose, such as a marina. A non-water-dependent project is one that does not require access to or proximity to or siting within a special aquatic site to achieve its basic purpose, such as a housing development or road construction.

The Section 404(b)(1) Guidelines establish two presumptions for projects that propose a discharge into a special aquatic site. First, it is presumed there are practicable alternatives to non-water dependent projects, "unless clearly demonstrated otherwise." 40 CFR § 230.10(a)(3). Second, "where a discharge is proposed for a special aquatic

site, all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise." 40 CFR § 230.10(a)(3). The thrust of the Section 404(b)(1) Guidelines is that applicants should design proposed projects to meet the overall project purpose while avoiding impacts on aquatic environments. This approach is emphasized in a Memorandum of Agreement (MOA) between the EPA and the Department of the Army (DA) concerning the determination of mitigation under the Section 404(b)(1) Guidelines (EPA 1990), as modified by the Corps and EPA Final Mitigation Rule promulgated at 33 CFR Parts 325, 332; 40 CFR Part 230. The MOA articulates the Section 404(b)(1) Guidelines' "sequencing" protocol as first, avoiding impacts; second, minimizing impacts; and third, providing practicable compensatory mitigation for unavoidable impacts and no overall net loss of functions and services.

In addition to the 404(b)(1) guidelines, 33 CFR 320.4 – General policies for evaluating permit applications, also requires the Corps to consider a Public Interest Review, which considers the probable impacts, including cumulative impacts, of the proposed activity on public interest, carefully weighing all factors which are relevant in each particular case. The Corps decision on whether to authorize the proposal, and if so, the conditions under which it will be considered are determined by the outcome of this general balancing act. Among the factors considered, including cumulative impacts, are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people. For activities involving 404 discharges, a permit would be denied if the discharge that would be authorized by such a permit would not comply with the 404(b)(1) guidelines.

1.2 ORGANIZATION OF THE REPORT

This Section 404(b)(1) alternatives analysis is the Corps' evaluation of the information provided in the Draft Environmental Impact Statement (DEIS), 4(f) analysis and technical reports provided with the DEIS. It incorporates information from the DEIS prior to the completion of a Final Environmental Impact Statement (FEIS), in order to complete the Section 404 review concurrent with the FHWA Record of Decision (ROD). The Section 404(b)(1) alternatives analysis is intended to be a stand-alone document.

The DEIS was prepared by FHWA (as the lead federal agency) and NDDOT in accordance with the requirements of the National Environmental Policy Act (NEPA) (42 USC 4341 et seq.) and in conformance with the Council for Environmental Quality (CEQ) regulations implementing NEPA.

This document provides information and analysis that allows the Corps to make a determination of the least environmentally damaging practicable alternative (LEDPA). Section 1 provides the Introduction, including the proposed project background, CWA Section 404(b)(1) regulatory background, and this organization section. Section 2 provides the Description of Proposed Project. Section 3 discusses the Basic and Overall Project Purpose. Section 4 discusses Alternatives that will be carried forward and those that were rejected by the Corps and do not warrant further analysis. Section 5 discusses Alternatives analyzed in detail. Section 6 discusses the Existing Conditions as it relates to WOUS. Section 7 discusses the Impact Analysis, as set forth in Subparts C through H of the Section 404(b)(1) Guidelines. Section 8 presents Actions to Minimize Adverse Effects. Section 9 discusses Compensatory Mitigation for unavoidable impacts to WOUS. Section 10 is the Corps conclusion on the 404(b)(1) analysis. Section 11 presents the Literature Cited.

2. DESCRIPTION OF PROPOSED PROJECT

The U.S. Highway 85 Project (project) encompasses approximately 62 miles of roadway in Stark, Billings, and McKenzie counties, North Dakota. (Figure 1, Project Location Map.) The project begins at the Interstate 94 (I-94) interchange and extends north to the Watford City Bypass (McKenzie County Road 30). The proposed project would expand this segment of U.S. Highway 85 from two-lanes to a four-lane highway and rehabilitate or replace the historic Long X Bridge over the Little Missouri River. The goal of the project is to maintain and follow the existing U.S. Highway 85 alignment, utilizing the existing infrastructure to minimize potential impacts on environmental, socioeconomic, and human-made resources, to the maximum extent practicable. The project is being led by the FHWA in cooperation with the NDDOT. The FHWA and NDDOT are functioning as joint lead agencies and are the primary entities responsible for compliance with the NEPA for which the Draft EIS has been prepared. In addition, the proposed project has three (3) cooperating agencies: the National Park Service (NPS), Corps, and U.S. Forest Service (USFS).

The project is part of a larger overall effort by the NDDOT and FHWA to expand U.S. Highway 85 to four lanes between I-94 and ND Highway 2. Funding for the proposed project would need to be authorized and the project would need to be added or amended to the Statewide Transportation Improvement Program (STIP). Funding has been programmed for the Long X Bridge portion of the project, and the Long X Bridge is currently listed in the STIP and scheduled for construction in 2019. Currently, it is anticipated that the first phase of the project would include the Long X Bridge with approximately 1-mile of approach roadways on each side of the bridge. This may include construction of the bighorn sheep underpass at RP 126.1. Funding has not been identified for any additional projects, however, following completion of the Long X Bridge section, the second priority would be constructing the roadway from the northern end of the corridor from the Watford City Bypass to the ND 22 intersection. The final phase would include construction of the new roadway from ND 22 intersection, south to I-94. It is anticipated that the actual construction projects would occur in 8 to 10-mile sections.

The project would include a system of wildlife crossings throughout the Badlands area, which is intended to improve habitat connectivity and reduce the potential for wildlife-vehicle collisions. Immediately adjacent to USFS-managed lands, two wildlife underpasses and the Long X Bridge would facilitate bighorn sheep and other wildlife movement. In addition to improving habitat connectivity for wildlife in general, fencing associated with the crossings would allow for the reintroduction of bighorn sheep northeast of the Long X Bridge. As such wildlife habitat would be improved within the Little Missouri National Grasslands (LMNG) and Badlands. The following are the proposed locations for the wildlife crossing structures:

- Wildlife crossing underpass at RP 122.5
- Wildlife crossing underpass at RP 126.1
- Long X Bridge (i.e., wildlife crossing underpass with water-flow) at RP 126.6.
- Wildlife fencing along both sides of US Highway 85 with jump-outs from RP 120.9 to RP 128.9.

The project would also include the construction of an 8-ft wide, asphalt shared use path with potential trailheads, along U.S. 85 from the planned Watford City trail system to McKenzie County Road 34. The trail would be located on the east side of the highway and be open to non-motorized use, such as bicyclists and pedestrians.

The proposed project would require a CWA Section 404 permit. An Aquatic Resource Delineation Report and request for a Jurisdictional Determination was submitted to the Corps in August of 2016. The Corps responded on November 3, 2016 with both a Preliminary and Approved Jurisdictional Determination for WOUS with the proposed project area.

The proposed discharges of fill material into WOUS would be associated with the construction of two additional lanes, resulting in a 4-lane highway; culvert extensions and the replacement/rehabilitation of the Long X Bridge across the Little Missouri River. The WOUS locations throughout the corridor are listed in the table in Appendix 3 and the anticipated impacts associated with construction activities for Alternatives B and C. Alternative F has a similar footprint but with less impacts. These were not provided to

the Corps as NDDOT did not carry this alternative forward because of safety concerns. The Corps has estimated the impacts based on the assumed width of a median. The median widths for each alternative are as follows: Alt B – 52-ft; Alt C – 20-ft; and Alt F approximately 6-ft. The permanent impact acreages provided in the table represent the footprint of the culvert, bridge, ditch/channel and any associated erosion protection that would be constructed at each WOUS crossing. The temporary impacts provided in Appendix 3 represent the additional area within the WOUS needed for access and equipment maneuvering in order to construct the culvert, bridge or ditch/channel. Once construction is completed, all temporary disturbance areas within the WOUS would be restored to pre-construction ground elevations, contours, and conditions as much as possible. All WOUS would be conveyed across the highway under the proposed project and existing drainage configurations would be maintained. No flows would be cut-off resulting in permanent impacts from downstream loss.

U.S. Highway 85, I-94 Interchange to Watford City Bypass
SECTION 404(b)(1) ALTERNATIVES ANALYSIS

Figure 1: Project Location

2.1 PROPOSED ACTIVITIES

The project includes several regulated activities relative to the reconstruction of U.S. Highway 85, which are all required in order for the project to be completed. These specific activities would result in a discharge of fill material into aquatic resources and result in both permanent and temporary impacts throughout the 62-mile corridor. The 4-lane project would include the following:

2.1.1 ROADWAY RECONSTRUCTION AND/OR REMOVAL OF STRUCTURES AND FILL:

This activity includes the reconstruction of an existing roadway which would result in material removal and a discharge of fill material in order to maintain the structural integrity and operational capacity of the roadway for adequate drainage, flood hazard reduction, and overall public safety. Deviations in the filled area may result from changes in materials, construction techniques, requirements of other regulatory agencies, or current design and safety standards which would be necessary for reconstruction to occur. Throughout the 62-mile corridor, the existing roadway would be widened to provide a safer highway for the traveling public. These activities would require fill material to be placed in regulated aquatic resources. Culverts would be replaced during construction, incidental to roadway widening. These culverts may consist of corrugated steel pipes and/or larger reinforced concrete box culverts. NDDOT and FHWA have also proposed wildlife crossings, some of which, may be constructed in areas crossing WOUS. These areas provide migration corridors and ecological connectivity for both aquatic and terrestrial organisms. The Long X Bridge which crosses the Little Missouri River, would be replaced with a new four-lane bridge east of the existing bridge.

2.1.2 TEMPORARY STRUCTURES OR FILLS NECESSARY FOR CONSTRUCTION ACTIVITIES

This includes temporary fills and other work, including the use of temporary mats, necessary to conduct any of the reconstruction activities above. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the

maximum extent practicable, when temporary discharges, including cofferdams, are necessary for maintenance activities, access fills, or temporary dewatering. Temporary fills must consist of non-erodible materials and be placed in a manner that will not be eroded by expected high flows. After conducting the reconstruction activity, temporary fills must be removed in their entirety and the affected areas returned to pre-construction contours, elevations and replanted with appropriate native seed mix.

2.2 AVOIDANCE, MINIMIZATION AND COMPENSATION

2.2.1 AVOIDANCE

It was determined by the applicant that complete avoidance of WOUS was not practicable. The Corps has determined that in order to meet the overall purpose and need, complete avoidance is not practicable. To utilize the existing transportation corridor, it is necessary to impact WOUS predominantly through culvert extensions and road widening.

2.2.2 MINIMIZATION

Throughout the extensive planning and design phases of the project, numerous alternatives were considered by the applicant to minimize impacts to WOUS and other major environmental impacts. Alternative alignments were considered during the DEIS that reduced environmental impacts (including those to WOUS) while still meeting the project's purpose and need. Later during design, options were considered to further minimize impacts to WOUS. Examples of design considerations that minimized impacts included limiting the number of piers in the Little Missouri River to the minimum necessary for the replacement of the Long X Bridge, reducing slopes necessary for the construction of a new roadway and countersinking box culverts and large pipes to allow for the re-establishment of natural substrate. Minimization during preliminary design was also developed for the badlands portion of the project. Retaining walls have been included in order to eliminate large fill slopes that would have otherwise resulted in more impacts to several wetlands and tributaries. Flexible design options have been included in the DEIS to further minimize impacts at the time the Corps makes a final decision on those phases of the project requiring authorization under Section 404 of the Clean Water Act.

Further minimization would occur with the implementation of Best Management Practices (BMP's). Some examples of this include the use of fiber rolls and silt curtains to limit the effects associated with the discharge of fill material on adjacent and downstream aquatic resources. An Individual Section 401 Water Quality Certification would be obtained by the applicant and include measures to ensure impacts to water quality are minimized. In addition, a Storm Water Pollution Prevention Plan (SWPPP) would be developed by NDDOT and implemented during construction. Since there is no regulatory time limit defining temporary impacts, the Omaha District has determined 12 months as a reasonable time limit for temporary impacts, such as temporary fills, to be removed and the discharge sites restored to original contours.

Once execution of the project begins, culverts and corrugated pipes would be placed 1-ft below the existing channel bottom at locations captured by the North Dakota Regional Conditions for the 2017 Nationwide Permitting Program. This allows for the re-establishment of natural substrate, ensuring sediment related functions and fish passage would remain following construction activities. This is a general form of minimization often used within the State of North Dakota to ensure there are no permanent loss of streams with the installation of concrete box culverts and corrugated pipes.

2.2.3 COMPENSATION

Wetland mitigation for the project is anticipated to be accomplished through the creation of wetland mitigation site(s) and/or purchasing credits at a wetland mitigation bank or in lieu fee program. Mitigation would be determined during final design and permitting. Primarily, resources to be impacted include palustrine emergent wetlands, intermittent and ephemeral streams (unnamed tributaries), and larger perennial rivers such as the Little Missouri River. Compensation for impacts to streams and other waters may be required.

As per the 2008 Final Mitigation Rule, the fundamental objective of compensatory mitigation is to offset environmental losses resulting from the unavoidable impacts to WOUS authorized by DA permits. The Corps must determine the compensatory

mitigation to be required for a DA permit, based on what is practicable and capable of compensating for the aquatic resource functions that would be lost as a result of the permitted activity. In making this determination, the Corps must assess the likelihood for ecological success and sustainability, the location of the compensation site relative to the impact site and their significance within the watershed, and the costs of the compensatory mitigation project. In many cases, the environmentally preferable compensatory mitigation may be provided through mitigation banks or in-lieu fee programs because they usually involve consolidating compensatory mitigation projects where ecologically appropriate, consolidating resources, providing financial planning and scientific expertise. Compensatory mitigation requirements must be commensurate with the amount and type of impact that is associated with a particular DA permit.

For individual permits, the permittee must prepare a draft mitigation plan and submit it to the Corps for review. The approved mitigation plan must contain performance standards that will be used to assess whether the project is achieving its objectives. Performance standards should relate to the objectives of the compensatory mitigation project, so that the project can be objectively evaluated to determine if it is developing into the desired resource type, providing the expected functions, and attaining any other applicable metrics (e.g., acres). For the U.S. Highway 85 project, a complete mitigation plan would be required and impacts would be mitigated at a minimum of a 1:1 ratio.

It should be noted that several factors may affect the amount of impacts for this project. The Corps is anticipating new guidance and rule-making on the definition of Waters of the U.S. prior to the permitting phase of the project. This would require a re-evaluation of the impacts during the permitting phase as well. It is unknown at this time whether that would result in a decrease or increase in potential impacts of the proposed project. Approved jurisdictional determinations are valid for a 5-year period, so additional phased projects may need to be re-evaluated.

3.0 BASIC AND OVERALL PURPOSE

3.1 BASIC PROJECT PURPOSE AND WATER DEPENDENCY

The basic project purpose comprises the fundamental, essential, or irreducible purpose of the proposed project, and is used by the Corps to determine whether the applicant's project is water dependent (i.e., whether it requires access or proximity to or siting within a special aquatic site). The basic project purpose for the proposed project is road construction, which is not water dependent. As noted in Section 1.1, the Section 404(b)(1) Guidelines at 40 CFR § 230.10(a)(3) set forth two rebuttable presumptions when the activity associated with a discharge is proposed in a special aquatic site, as defined at 40 CFR Part 230, subpart E. The U.S. Highway 85 project would result in a discharge of fill material into special aquatic sites.

3.2 OVERALL PROJECT PURPOSE

The overall project purpose serves as the basis for the Corps' Section 404(b)(1) alternatives analysis and is determined by further defining the basic project purpose in a manner that more specifically describes the applicant's goals and accounts for logistical considerations for the project while also considering the public's perspectives, and which allows a reasonable range of alternatives to be analyzed. It is critical that the overall project purpose be defined to provide for a meaningful evaluation of alternatives. It should not be so narrowly defined as to give undue deference to the applicant's wishes, thereby unreasonably limiting the consideration of alternatives. Conversely, it should not be so broadly defined as to render the evaluation unreasonable and meaningless.

The overall purpose of this project is to reconstruct 62 miles of U.S. Highway 85, a two-lane highway, to a four-lane highway in order to improve system linkage within the region and state; improve safety; to address social demands created by the rise in traffic volumes and influx of people; facilitate economic development; improve roadway reliability; and provide highway capacity to accommodate current and future traffic volumes.

4.0 ALTERNATIVES CONSIDERED

The FHWA and NDDOT have prepared a Draft EIS with the Corps, National Park Service, and the U.S. Forest Service as cooperating agencies. During the FHWA EIS process, a multidisciplinary process was undertaken to identify a range of reasonable alternatives to be studied in detail in the EIS. The process involved identifying, comparatively screening, and eliminating alternatives based on:

- Input from the public
- A multidisciplinary set of criteria evenly applied
- The historical context of the proposed action
- Projected conditions with and without the alternatives being considered

FHWA and NDDOT developed an Alternatives Methodology to document the process of identifying, evaluating, and advancing reasonable alternatives for further analysis with an overall goal of identifying the preferred alternative (NDDOT 2018b). The Alternatives Methodology included a three-phase screening process that considered recommendations from previous reports and studies; project purpose and need; project constraints, design criteria and standards; and engineering and environmental impact analysis. Development of this Alternatives Methodology is being driven by the environmental review process required under SAFETEA-LU; whereby, the lead agency, in cooperation with cooperating and participating agencies, is required to determine the methodology and level of detail for consideration of a reasonable range of alternatives (FHWA 2005). The three phases included:

- Phase I: Develop Full Range of Reasonable Alternatives
  - Step 1: Define Range of Reasonable Alternatives
  - Step 2: Consider Recommendations from Previous Reports and Studies
  - Step 3: Screen for Consistency with Project Purpose and Need/Project Goals
  - Step 4: Summarize Findings and Conduct Phase II.
- Phase II – Desktop Review of Reasonable Alternatives
  - Step 1: Screen for Consistency with Project Constraints and Design Criteria and Standards

  - Step 2: Consider Comments Received from Agencies and Public Alternatives Workshop
  - Step 3: Summarize Findings and Conduct Phase III.
- Phase III – Engineering and Environmental Impact Analyses of Reasonable Alternatives
  - Step 1: Conduct Engineering Analysis
  - Step 2: Conduct Environmental Impact Analysis
  - Step 3: Recommend Preferred Alternative.

The following table lists the alternatives considered during the review process. These will be discussed in detail in this section.

Table 1: Alternatives considered during review.

Alternative	Description
Corridor Alternatives	
A	No Action
B	4-lane section on existing alignment – divided, depressed median w/options (Applicant preferred)
C	4-lane section on existing alignment – divided flush median with options
D	Super Highway with passing and turning lanes
E	Rehabilitation of existing roadway with wider shoulders
F	4-lane section on existing alignment undivided
G	4-lane outside existing alignment – 1-2 miles away
H	4-lane outside existing alignment with two lanes 1-2 miles away
I	6-lane highway
J	Elevated roadway
K	One-way pair
L	Construct a pipeline
M	Public Transit

4.1 ALTERNATIVE A: NO ACTION

The No Action alternative (Alt A) would not expand the existing highway capacity between I-94 to the Watford City Bypass or replace or rehabilitate the existing Long X Bridge. Alt A can be used, however, as a baseline for evaluation of impacts of the potential build alternatives. The 105 miles between U.S. Highway 85 between I-94 north to the junction of U.S. Highway 2, the northern 43 miles from Watford City to Williston has been expanded from 2-lanes to 4-lanes. Alt A does not provide for a system linkage with a continuous 4-lane highway between I-94 and Watford City. Passing lanes are currently limited to a 7-mile stretch of highway through the Badlands that contains a southbound climbing lane south the Little Missouri River (LMR) and a northbound climbing lane north of the LMR. The limited passing opportunities on a 2-lane highway can result in drivers engaging in risk-taking behavior when faced with slow moving trucks through much of the corridor.

There are currently three bridge structures located along the existing alignment crossing the South Branch of the Green River, the LMC, and Spring Creek. The bridges over the South Branch of the Green River and Spring Creek are three-span, concrete bridges with no overhead height restrictions. These two bridges are overall in good conditions.

The Long X Bridge over the LMC is a three-span, steel truss bridge with a height restriction of 16-ft. The height restriction forces over-height vehicles to detour around the Long X Bridge via ND 22. Based on the final destination, this can result in an average of 50 additional highway miles traveled one-way. Between July of 2013 and July 2015, a total of 263 over-height permits were submitted to the NDDOT and denied due to the existing height restrictions. Since 2011, there have been 7 major incidents of over-height vehicles hitting the Long X Bridge resulting in one instance of full closure for 5-days for analysis and repair, three instances of over-night closures of approximately 2 weeks each for repairs, and one planned closure to repair the most recent damage. This results in both social and economic impacts on all user groups. In addition to over-height vehicles, more than 24,000 legally permitted over-width vehicles crossed the Long X Bridge from January of 2014 to November of 2015. Although most of these loads were able to cross the bridge without a disruption to traffic, 1200 of these required a temporary closure of the opposing traffic lane to accommodate the loads.

Alt A would maintain the existing infrastructure as it is today and no highway expansion would occur. This alternative does not meet the purpose and need of the long-term transportation system linkage of the region. This highway is one of the primary arterial roadways accessing the Bakken Oilfields of western North Dakota. Over the past several years, the average daily traffic (ADT) volumes along this roadway has increased substantially from less than 2000 vehicles a day prior to 2009, to over 5000 in 2014. There was a decline in ADT from 2014 to 2016, but traffic has increased since the low in 2016 (NDDOT 2018a).

The purpose of the proposed action is to provide a transportation corridor that would address the social demands created by the rise in traffic volumes and influx of people, and facilitate economic development within the region by providing an efficient and reliable highway system. The proposed project must also accommodate a mix of industrial, agricultural and passenger traffic, while providing reasonable accommodations for oversized loads and passing opportunities for the traveling public. The proposed project would also improve system linkage within the region and state by expanding the existing highway on the current alignment to create a continuous 4-lane

highway from the I-94 Interchange to U.S. Highway 2. The proposed project would also improve safety along the project corridor for the traveling public while accommodating current and future highway capacity. The purpose and need also includes improving the highway reliability through addressing the height and width restrictions of the Long X Bridge and slope stability and landslide issues along the corridor. The purpose and need would also address the occurrence of wildlife/vehicle related crashes and minimize wildlife habitat fragmentation.

Table 2: Alternative A matrix for addressing purpose and need.

Purpose and Need	Alt A
Address social demands created by the rise in traffic volumes and influx of people, and facilitate economic development within the region by providing an efficient and reliable highway system	Does not address increase in traffic volumes or alleviate the need for closures at the Long X Bridge
Accommodate a mix of industrial, agricultural, and passenger traffic, while providing reasonable accommodations for oversized loads and ample passing opportunities for the traveling public	Does not meet the need for accommodating oversized loads at the Long X Bridge
Improve system linkage within the region and state by expanding the existing highway on essentially its current alignment to create a continuous four-lane highway from the I-94 interchange to US Highway 2	Does not provide a 4-lane roadway between I-94 and Watford City.
Improve safety along the project corridor for the traveling public	Does not improve safety.
Provide highway capacity to accommodate current and future traffic volumes	Does not increase capacity
Satisfy transportation demands associated with the US Highway 85 corridor, while maintaining compatibility with federal land management agencies	Does not satisfy increasing transportation demands.
Improve roadway reliability by addressing current height and width restrictions associated with the Long X Bridge and slope stability and landslide issues along the roadway corridor	Does not meet the need for accommodating oversized loads at the Long X Bridge or address landslide and slope stability
Reduce the potential for wildlife/vehicle-related crashes, and minimize wildlife habitat fragmentation	Does not address wildlife

Alt A will be carried forward as the baseline conditions within the corridor.

4.2 ELEMENTS COMMON TO ALT B, C, D, E, AND F

Most of the build alternatives have common characteristics that will be addressed in this section. The major difference in all of the build alternatives is the width and design of the median. Alt B would have a divided, flush median of 52-ft; Alt C would have a divided flush median of 20-ft in width, Alt D would include widening of the highway for passing and turn lanes; Alt E would widen the shoulders; and Alt F would include 2 additional lanes with a barrier. The goal of the project is to provide a safe corridor for the traveling public from the Interchange of I-94 to Watford City, where U.S. Highway 85 continues north towards Williston, North Dakota. Alternatives B, C and F consist of a 4-

lane roadway with a divided median to provide additional area between the roadway sections. The applicant has indicated that traffic volumes and the associated updates to the corridor require additional safety considerations when designing a 4-lane roadway. This includes efforts to prevent head on collisions by physically separating the roadway or providing appropriate space between lanes of opposing traffic. Methods associated with the construction of the roadway remain similar throughout the existing corridor.

It is anticipated that each segment would take two construction seasons to complete, with the first season consisting of utility relocation, culvert installation, topsoil removal, grading, graveling, seeding, and erosion-control. The second season would consist of paving (i.e., surfacing), pavement marking, and permanent sign installation and associated safety items. The first stage of construction would include establishing work zones, staging areas, and temporary work zone traffic-control signing. Temporary erosion-control devices would be installed as necessary, prior to any ground-disturbing activities. Staging areas and borrow sources would be cleared and topsoil would be removed and stockpiled for use during reclamation. Temporary fencing would be installed along pastures used for livestock grazing, and fencing would be provided at all times along the Theodore Roosevelt National Park (TRNP) – North Unit.

Roadway construction would begin by removing the existing topsoil in areas where the roadway would be expanded (Alt C) or constructed adjacent to the existing alignment (Alt B). The topsoil would be stockpiled and replaced after grading operations have occurred. Best construction practices would be used to prevent erosion. After the topsoil is removed and salvaged, earthwork grading operations would begin. These operations include a combination of hauling and placing fill material (i.e. soil) in areas that require additional material and removing excess material in cut areas. Work on approaches (i.e. field drives, section lines, and private driveways) would include placement of fill material to widen existing approaches and to construct new approaches as necessary. During the grading operations, drainage structures (i.e. culverts) would be extended and/or installed as required through the roadway and approaches to maintain existing drainage patterns. Once the grading operations are completed the following activities would occur:

- Gravel would be placed on the surface of the roadway
- Topsoil would be replaced
- Seeding and erosion-control protection (i.e. seeding, straw mulch) would be installed
- Permanent fencing would be installed

The roadway would be paved the following construction season. Timing of construction activities would be limited in proximity to the TRNP – North Unit. Timing restrictions would extend from reference point (RP) 126 to RP 130. In this area, regular construction activities (i.e. all activities except pile driving) would be limited to 7 am to 9 pm MST. Certain construction activities would require work outside of these times. The contractor would be required to notify the NDDOT prior to working outside of the established times, and the NDDOT would notify the NPS. Should construction fall behind schedule, sustained 24-hour construction may be required. In the event that sustained 24-hour construction becomes necessary, the NDDOT would coordinate with the NPS prior to commencing this schedule.

Prior to developing the Special-Use Permit for temporary construction activities on NPS-managed lands, there would be discussions regarding extenuating circumstances that may necessitate 24-hour construction and additional conditions that may accompany 24-hour construction. In the realignment areas and reconstruction areas (i.e. Badlands, near Watford City, and Fairfield [Option FF-1]), it is anticipated the existing roadway surfacing would be removed during grading operations and a temporary paved surface would be in-place during the winter months until the final paving operation occurs the following construction season. Upon completion of roadway paving and pavement marking, permanent signs (i.e. curve warning signs, speed limit signs) and associated safety items would be installed to complete the project.

Construction of the shared use path could be completed in conjunction with construction of the roadway. Grading operations for the trail could occur concurrently with the grading operations of the new roadway. The surfacing of the trail could occur the

following construction season when the roadway is surfaced or at a later date depending on when funding for the path is received.

During preliminary design and development of the DEIS, wildlife migration patterns and overall use of the surrounding area were considered. NDDOT and FHWA have incorporated three wildlife crossings within the Badlands segment of the proposed project. This particular area provides highly valued habitat among terrestrial species, on both sides of U.S. Highway 85. Specifically, these crossings would provide ecological connectivity between habitats for Big horn sheep (*Ovis canadensis*), Whitetail deer (*Odocoileus virginianus*), and Mule deer (*Odocoileus hemionus*). One wildlife underpass would be constructed below the new Long X Bridge to maintain the riparian corridor and promote safe passage for wildlife in the area surrounding TRNP.

The wildlife crossing underpass at RP 122.5 has been designed for Mule deer (*Odocoileus hemionus*) and would consist of a concrete box culvert approximately 10-ft tall, 20-ft wide and 136-ft lone. Construction would likely be completed in two stages. First, the contractor would construct a portion of the structure while traffic is using the existing roadway and/or a temporary bypass within the existing ROW. Traffic would then be moved to travel over the completed first stage while the rest of structure is built. Construction activities would consist of excavation of the existing roadway embankment down to the bottom of box culvert elevation, placement of culvert foundation materials, and placement of the precast culvert sections. Following completion of culvert construction, the culvert would be backfilled, and the roadway section above would be constructed

The wildlife crossing underpass at RP 126.1 is designed specifically for Big horn sheep (*Ovis canadensis*) underpass and would consist of a structure that is a minimum of 15-ft tall, 40-ft wide and would have a length of approximately 150-ft . Construction would likely be completed in two stages. First, the contractor would construct a portion of the structure while traffic is using the existing roadway and/or a temporary bypass within the existing ROW. Traffic would then be moved to travel over the completed first stage while the rest of structure is built. Construction activities would consist of excavation of

the existing roadway embankment down to the foundation elevation, pile driving, placement of foundation materials, and construction of the concrete structure. Following completion of structure construction, the structure would be backfilled, and the roadway section above would be constructed.

A third wildlife crossing would be incorporated into the design of the Long X Bridge at RP 126.6. The banks below the existing bridge provide relatively flat benches, approximately 80-ft wide on each bank, and the bridge provides approximately 30-ft and 19-ft clearance over the benches on the southern and northern banks, respectively. New bridges constructed as part of Options LX-1, LX-2 or LX-3 (discussed under Alt B) would be designed to maintain the bench width and would provide approximately 4-ft less vertical clearance due to the need to match the roadway profile of the existing bridge. The options are not discussed in this document. Please refer to the DEIS for further information.

The Long X Bridge is expected to be replaced with a 4-lane structure over the Little Missouri River. The bridge would be part of the mitigation required for Section 106. Bridge substructures (i.e., piers and abutments) would be constructed of concrete and supported by a deep foundation system. The deep foundation system could consist of driven piles or drilled shafts. A pier is a bridge component used to support the part of the bridge that carries traffic (superstructure). A typical pier consists of foundation piling, footing, and columns (or wall). There would be a total of four piers: one on the south bank of the river, two in the river channel, and one on the north bank of the river.

Construction of supporting piers and footings in the Little Missouri River would be accomplished using cofferdams or earthen ring dikes. Once the cofferdams or ring dikes are in place, the contractor would need to excavate the channel bottom inside the cofferdam to the required pier foundation elevation. The deep foundation would be installed in the ground and the concrete footing would be placed on top of the foundation. After the footing and pier column are constructed, the excavated material would be backfilled and any excess material would be removed from the channel and disposed of at an approved location. The bridge superstructure would consist of a

reinforced concrete deck, supported by either pre-stressed concrete or steel-plate girders. Upon completion of construction, all temporary fills and structures would be removed and the stream bed and banks would be restored to pre-construction condition.

Land pier construction would be similar, except cofferdams or ring dikes would not be needed. Construction activities would include excavation to the bottom of the footing, approximately 6 to 8 feet below the existing ground surface. Rock riprap (i.e., loose stone used to form a protective mat) would be added at the northern abutment (i.e., bridge end) and all piers to reduce stream channel erosion. Any riprap installed within the designated wildlife crossing area on the northern bank of the Little Missouri River would be covered with topsoil, and all other riprap would be covered 1-foot below the channel bottom elevation.

To facilitate access for construction equipment, materials, and labor forces, the bridge contractor would need to place temporary fill in the channel to construct a causeway or bypass. River flow would be maintained by installing temporary culverts or by leaving part of the channel open. Depending on the water depths at the time of construction, the contractor may construct a temporary work bridge in lieu of a causeway. As with roadway construction, the timing of bridge construction activities would be limited in proximity to the TRNP – North Unit, and work outside of the timing restrictions may be required. In addition to the timing restriction for regular construction activities, pile driving activities in this area would be limited to 7:00 a.m. to 6:00 p.m. MST.

4.2.1 ACTIVITIES IN WATERS OF THE U.S

There were 429 wetlands and 6 rivers, streams and drainage areas identified within the proposed project area. Approximately 164.08 acres of wetlands were delineated and 13.55 acres of rivers, streams and drainage areas identified within the project area. Of the waters within the project area, 230 were determined to be jurisdictional. This includes linear slope wetlands, palustrine emergent wetland depressions, and streams (perennial, intermittent and ephemeral). As previously discussed, this also includes the Little Missouri River which is bisected by U.S. Highway 85 in the badlands portion of the

project. Based on the aquatic resource information, several activities would occur in WOUS.

Culverts and corrugated pipes would be replaced and extended throughout the project. Some resources flow under the roadway and those connections would be maintained. Riprap would be placed at the culvert and pipe ends to prevent scouring and erosion. The installation of the culverts and pipes, riprap, and other inert material (soil) used for the completion of the project would occur within regulated waterways.

The Long X Bridge may require temporary approach fills in order to install piers for the new bridge structure. However, temporary fills associated with bridge construction would be removed and the area restored to preconstruction conditions. The footprint of the piers and riprap that would be installed to prevent erosion around the piers, would be located within the Little Missouri River. Other temporary features, such as cofferdams, would be utilized during construction and removed following the completion of construction activities.

Wetland depressions located along the roadway would require fill to be placed during earthwork activities to establish a grade for the wider roadway. This extended footprint into regulated waters would require the deposition of fill material by grading equipment and excavators. Some excavating activities may occur outside of wetland boundaries, while others may require temporary matting and access during construction activities.

The proposed wildlife crossings would be located in areas where U.S. Highway 85 crosses regulated water resources. During design and development of the DEIS, it was determined that providing larger culverts in areas containing WOUS would maintain flows and allow both terrestrial and aquatic organisms the ability to move freely under the roadway. Temporary impacts associated with the use of heavy equipment in these areas is anticipated.

4.3 ALTERNATIVE B - 4-LANE SECTION ON EXISTING ALIGNMENT – DIVIDED, DEPRESSED MEDIAN W/OPTIONS (APPLICANT'S PREFERRED)

Alternative B (Alt B) includes expanding from 2 to 4-lanes on the existing alignment for 62-miles with a divided, depressed, center median of approximately 52-ft shoulder to shoulder (See Figure 2). The roadway would be designed for a posted speed limit of 70-mph and would have two 12-ft wide driving lanes in each direction. The outside paved shoulders would be a minimum of 8-ft wide with inside paved shoulders of 4-ft wide minimum making a total roadway width of 124-ft. This alternative would utilize the existing two lanes as a one-way direction and construct two adjacent lanes. The existing roadway would require widening to accommodate the 8-ft wide shoulders. The slope across the roadway (super-elevation) would need to be corrected with an asphalt overlay and one existing crest vertical curve would need to be reconstructed to meet the proposed design seed of 70-mph. NDDOT (2016) created a detailed Map Book as part of a roadway constraints assessment to determine which side of the existing roadway would be the most optimal for expansion based on a number of criteria. The goal of this assessment was to avoid impacts on existing resources (e.g. homes, buildings, large utilities, cultural resources) while minimizing the number of crossovers (i.e. transitions from expanding on one side of the existing roadway to expanding on the other). Table 4 addresses Alt B and the purpose and need of the proposed project.

Figure 2: Typical Section for Divided, Depressed Median.

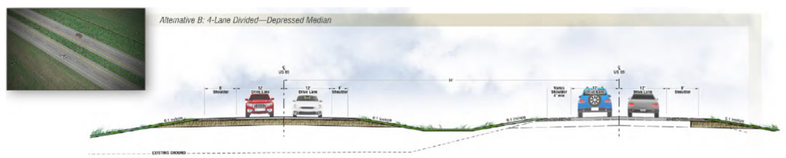


Table 3: Alternative B matrix for addressing Purpose and Need

Purpose and Need	Alt B
Address social demands created by the rise in traffic volumes and influx of people, and facilitate economic development within the region by providing an efficient and reliable highway system	Addresses increase in traffic volumes and eliminates the need for closures of the Long X Bridge with the inclusion of Alt 4 under Long X Bridge Alternatives
Accommodate a mix of industrial, agricultural, and passenger traffic, while providing reasonable accommodations for oversized loads and ample passing opportunities for the traveling public	When coupled with Alt 4 for the Long X Bridge – provides for reasonable accommodations for over-sized loads.
Improve system linkage within the region and state by expanding the existing highway on essentially its current alignment to create a continuous four-lane highway from the I-94 interchange to US Highway 2	Provides for 4-lanes between I-94 and U.S. 2 interchange
Improve safety along the project corridor for the traveling public	Reduces the potential for head-on collisions and improves safety within the corridor
Provide highway capacity to accommodate current and future traffic volumes	Increases capacity for present and future transportation demands
Satisfy transportation demands associated with the US Highway 85 corridor, while maintaining compatibility with federal land management agencies	Satisfies increasing transportation demands and maintains compatibility with federal land management agencies
Improve roadway reliability by addressing current height and width restrictions associated with the Long X Bridge and slope stability and landslide issues along the roadway corridor	Meets the need for accommodating oversized loads at the Long X Bridge or address landslide and slope stability
Reduce the potential for wildlife/vehicle-related crashes, and minimize wildlife habitat fragmentation	Addresses wildlife connectivity issues

Alt B meets the purpose and need of the proposed project and will be carried forward for additional analysis.

4.4 ALTERNATIVE C: 4-LANE DIVIDED, FLUSH MEDIAN

This alternative would expand the highway to a divided, 4-lane section with a flush center median. An example of a typical section of this alternative is shown in Figure 3: Typical Section for Divided, Flush Median. Expansion associated with Alt C would occur

equally to both sides of the existing roadway. As an additional safety measure, rumble strips would be installed within non-turning lane segments of the flush, center median to discourage drivers from using the center median as a passing lane. Design criteria for Alt C include the following:

- Roadway would have a design speed, as well as a posted speed limit, of 65 mph.
- Roadway section would consist of two 12-foot wide driving lanes in each direction.
- Outside paved shoulders would be a minimum of 8 feet wide.
- Opposing directions of traffic would be separated by a paved, 20-foot-wide, flush median.
- Total width from outside shoulder to outside shoulder would be 84 feet.

Alternatives B and C would begin at the northern end of the I-94 interchange. To tie the project into the two-lane typical section south of the I-94 interchange, restriping of the interchange would be required. The addition of a U.S. Highway 85 northbound lane would be achieved by adding a free-flowing right-hand turn lane to the I-94 westbound off-ramp. Conversely, the addition of a U.S. Highway 85 southbound lane would be achieved by adding a designated right-hand turn lane onto the I-94 westbound on-ramp. Table 5 includes a discussion on how Alt C meets the purpose and need of the proposed project.

Figure 3: Typical Section for Divided, Flush Median

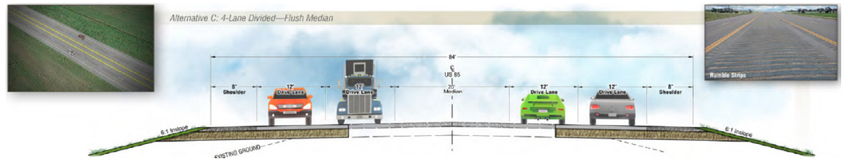


Table 4: Alternative C matrix for addressing purpose and need.

Purpose and Need	Alt C
Address social demands created by the rise in traffic volumes and influx of people, and facilitate economic development within the region by providing an efficient and reliable highway system	Addresses increase in traffic volumes and eliminates the need for closures of the Long X Bridge with the inclusion of Alt 4 under Long X Bridge Alternatives
Accommodate a mix of industrial, agricultural, and passenger traffic, while providing reasonable accommodations for oversized loads and ample passing opportunities for the traveling public	When coupled with Alt 4 for the Long X Bridge – provides for reasonable accommodations for over-sized loads.
Improve system linkage within the region and state by expanding the existing highway on essentially its current alignment to create a continuous four-lane highway from the I-94 interchange to US Highway 2	Provides for 4-lanes between I-94 and U.S. 2 interchange
Improve safety along the project corridor for the traveling public	Reduces the potential for head-on collisions and improves safety within the corridor
Provide highway capacity to accommodate current and future traffic volumes	Increases capacity for present and future transportation demands
Satisfy transportation demands associated with the US Highway 85 corridor, while maintaining compatibility with federal land management agencies	Satisfies increasing transportation demands and maintains compatibility with federal land management agencies
Improve roadway reliability by addressing current height and width restrictions associated with the Long X Bridge and slope stability and landslide issues along the roadway corridor	Meets the need for accommodating oversized loads at the Long X Bridge or address landslide and slope stability
Reduce the potential for wildlife/vehicle-related crashes, and minimize wildlife habitat fragmentation	Addresses wildlife connectivity issues

Alt C meets the purpose and need of the proposed project and will be carried forward for additional analysis.

4.5 ALTERNATIVE D: SUPER 2 HIGHWAY WITH PASSING AND TURN LANES

A Super 2 Highway would include a periodic passing lane that is added to a 2-lane rural highway to allow passing of slower vehicles. The passing lane would alternate from one direction of travel to the other within a section of roadway, allowing for passing opportunities in both directions. A Super 2 project can be introduced on an existing two-lane roadway where there is a significant amount of slow moving traffic, limited sight distance for passing, and/or the existing traffic volume has exceeded the two-lane highway capacity, creating the need for vehicles to pass on a more frequent basis. Table 6 includes a discussion on how Alt F meets the purpose and need of the proposed project. This alternative would have less impacts to WOUS because culverts along the existing highway would require minimal widening of approximately 12-20-ft to accommodate passing and turn lanes. This alternative is estimated to have less than 1.0 acres of WOUS impacts.

Table 5: Alternative D matrix for addressing Purpose and Need

Purpose and Need	Alt D
Address social demands created by the rise in traffic volumes and influx of people, and facilitate economic development within the region by providing an efficient and reliable highway system	Does not address increase in traffic volumes.
Accommodate a mix of industrial, agricultural, and passenger traffic, while providing reasonable accommodations for oversized loads and ample passing opportunities for the traveling public	Does provide for opportunities to pass slow-moving vehicles on a limited basis. Most likely would still require replacing the Long X Bridge.
Improve system linkage within the region and state by expanding the existing highway on essentially its current alignment to create a continuous four-lane highway from the I-94 interchange to US Highway 2	Does improve the flow of traffic with turn lanes and passing lanes. However, it does not meet the purpose and need to provide a continuous system linkage with U.S. 85 north of Watford City
Improve safety along the project corridor for the traveling public	May increase the occurrence of head-on collisions within the corridor. However, does alleviate the risk-taking associated with passing and provides turn lanes for added safety.
Provide highway capacity to accommodate current and future traffic volumes	Does increase capacity when vehicles can pass slow-moving vehicles, but would not address future traffic needs
Satisfy transportation demands associated with the US Highway 85 corridor, while maintaining compatibility with federal land management agencies	Satisfies increasing transportation demands and maintains compatibility with federal land management agencies
Improve roadway reliability by addressing current height and width restrictions associated with the Long X Bridge and slope stability and landslide issues along the roadway corridor	Assuming that the Long X Bridge replacement would be a priority, this Alternative would address over-sized loads. However, it may not be sufficient to address slope stability and landslide issues.
Reduce the potential for wildlife/vehicle-related crashes, and minimize wildlife habitat fragmentation	Does not address wildlife connectivity issues

4.6 ALTERNATIVE E: REHABILITATION OF EXISTING ROADWAY WITH WIDER SHOULDERS

Alt E would use the existing roadway and add 8-ft shoulders to each direction of the highway. Major rehabilitation of a roadway is the planned strategy in which

major work is performed to bring a highway up to an acceptable condition to extend the service life and provide operational improvements (i.e. adding turn lanes). Major rehabilitation projects may include reclaiming the existing surface material and base along with the placement of additional surface material and/or work necessary to return an existing roadway, including shoulder, bridges, the roadside and appurtenances to a condition of structural functional adequacy. On these projects the roadway elevation may change, shoulders may be added, and fore-slope corrections may be made. The roadway would be resurfaced and safety improvements would be completed as required. A crash analysis would be complete and cost effective enhancements would be addressed. This alternative would result in minimal impacts to WOUS, similar to Alt D. Table 7 provides an analysis of Alt E and the purpose and need of the proposed project.

Table 6: Alternative E matrix for addressing Purpose and Need

Purpose and Need	Alt E
Address social demands created by the rise in traffic volumes and influx of people, and facilitate economic development within the region by providing an efficient and reliable highway system	Does not address increase in traffic volumes.
Accommodate a mix of industrial, agricultural, and passenger traffic, while providing reasonable accommodations for oversized loads and ample passing opportunities for the traveling public	Does not provide for opportunities to pass slow-moving vehicles. Most likely would still require replacing the Long X Bridge.
Improve system linkage within the region and state by expanding the existing highway on essentially its current alignment to create a continuous four-lane highway from the I-94 interchange to US Highway 2	Does not improve the flow of traffic. Does not meet the purpose and need to provide a continuous system linkage with U.S. 85 north of Watford City
Improve safety along the project corridor for the traveling public	Improves safety through providing wider shoulders, but does not address head-on collisions or slow moving vehicles on roadway.
Provide highway capacity to accommodate current and future traffic volumes	Does not address current and future transportation needs
Satisfy transportation demands associated with the US Highway 85 corridor, while maintaining compatibility with federal land management agencies	Does not address the transportation demands on the current roadway.
Improve roadway reliability by addressing current height and width restrictions associated with the Long X Bridge and slope stability and landslide issues along the roadway corridor	Assuming that the Long X Bridge replacement would be a priority, this Alternative would address over-sized loads. However, it may not be sufficient to address slope stability and landslide issues.
Reduce the potential for wildlife/vehicle-related crashes, and minimize wildlife habitat fragmentation	Does not address wildlife connectivity issues

4.7 ALTERNATIVE F: 4-LANE SECTION ON EXISTING ALIGNMENT UNDIVIDED

This alternative is similar to Alt B and C with the construction of two additional lanes for a total of 4-lanes of highway. This alternative would have overall less impacts because the median width would be a minimum of 4-6-ft wide. This alternative would result in impacts to WOUS with the addition of two 12-ft traveling lanes and one 8-ft shoulder

(assuming the shoulder on the existing two lane highway can be used for the northbound lane).

Table 7: Alternative F matrix for addressing Purpose and Need

Purpose and Need	Alt F
Address social demands created by the rise in traffic volumes and influx of people, and facilitate economic development within the region by providing an efficient and reliable highway system	Addresses increase in traffic volumes and eliminates the need for closures of the Long X Bridge with the inclusion of Alt 4 under Long X Bridge Alternatives
Accommodate a mix of industrial, agricultural, and passenger traffic, while providing reasonable accommodations for oversized loads and ample passing opportunities for the traveling public	When coupled with Alt 4 for the Long X Bridge – provides for reasonable accommodations for over-sized loads.
Improve system linkage within the region and state by expanding the existing highway on essentially its current alignment to create a continuous four-lane highway from the I-94 interchange to US Highway 2	Provides for 4-lanes between I-94 and U.S. 2 interchange Does improve the flow of traffic. Does meet the purpose and need to provide a continuous system linkage with U.S. 85 north of Watford City
Improve safety along the project corridor for the traveling public	Improves safety, but does not address head-on collisions
Provide highway capacity to accommodate current and future traffic volumes	Does address current and future transportation needs
Satisfy transportation demands associated with the US Highway 85 corridor, while maintaining compatibility with federal land management agencies	Does address the transportation demands on the current roadway. However, does not address some of the safety concerns associated with the existing highway.
Improve roadway reliability by addressing current height and width restrictions associated with the Long X Bridge and slope stability and landslide issues along the roadway corridor	The Long X Bridge would be replaced with a larger structure, therefore, addressing concerns with over-sized loads.
Reduce the potential for wildlife/vehicle-related crashes, and minimize wildlife habitat fragmentation	Would still address wildlife connectivity although the benefits may be reduced from a wider highway for underpasses

4.8 ALTERNATIVES OUTSIDE OF THE EXISTING ALIGNMENT

4.8.1 ALTERNATIVE G - 4-LANE OUTSIDE EXISTING ALIGNMENT – 1-2 MILES AWAY

Alternative G was eliminated early in the scoping and preliminary alternatives analysis because it would require the purchase of additional right-of-way and construction of a new roadway through an area that is undisturbed. It does meet the purpose and need of the proposed project by providing for current and future transportation demands, facilitating economic development, provides system linkage, and would be safer than the existing highway. Approximately 932 acres of additional right-of-way and property would need to be acquired for this alternative. This alternative will not be carried forward.

Table 7: Alternative G matrix for addressing Purpose and Need

Purpose and Need	Alt G
Address social demands created by the rise in traffic volumes and influx of people, and facilitate economic development within the region by providing an efficient and reliable highway system	Addresses increase in traffic volumes and eliminates the need for closures of the Long X Bridge with the inclusion of Alt 4 under Long X Bridge Alternatives
Accommodate a mix of industrial, agricultural, and passenger traffic, while providing reasonable accommodations for oversized loads and ample passing opportunities for the traveling public	When coupled with Alt 4 for the Long X Bridge – provides for reasonable accommodations for over-sized loads.
Improve system linkage within the region and state by expanding the existing highway on essentially its current alignment to create a continuous four-lane highway from the I-94 interchange to US Highway 2	Provides for 4-lanes between I-94 and U.S. 2 interchange Does improve the flow of traffic. Does meet the purpose and need to provide a continuous system linkage with U.S. 85 north of Watford City
Improve safety along the project corridor for the traveling public	Improves safety, but does not address head-on collisions
Provide highway capacity to accommodate current and future traffic volumes	Does address current and future transportation needs
Satisfy transportation demands associated with the US Highway 85 corridor, while maintaining compatibility with federal land management agencies	Does address the transportation demands on the current roadway. However, does not address some of the safety concerns associated with the existing highway.
Improve roadway reliability by addressing current height and width restrictions associated with the Long X Bridge and slope stability and landslide issues along the roadway corridor	The Long X Bridge would be replaced with a larger structure, therefore, addressing concerns with over-sized loads.
Reduce the potential for wildlife/vehicle-related crashes, and minimize wildlife habitat fragmentation	Would still address wildlife connectivity although the benefits may be reduced from a wider highway for underpasses

4.8.2 ALTERNATIVE H: 4-LANE OUTSIDE EXISTING ALIGNMENT WITH TWO LANES 1-2 MILES AWAY

Alternative H was eliminated early in the scoping and preliminary alternatives analysis because it would require the purchase of additional right-of-way and construction of a new roadway through an area that is undisturbed. The existing two lanes would be converted to one direction following completion of the new 2-lane section. It does meet the purpose and need of the proposed project by providing for current and future transportation demands, facilitating economic development, provides system linkage, and would be safer than the existing highway. Approximately 466 acres of additional right-of-way and property would need to be acquired for this alternative. This alternative will not be carried forward.

Table 8: Alternative H matrix for addressing Purpose and Need

Purpose and Need	Alt H
Address social demands created by the rise in traffic volumes and influx of people, and facilitate economic development within the region by providing an efficient and reliable highway system	Addresses increase in traffic volumes and eliminates the need for closures of the Long X Bridge with the inclusion of Alt 4 under Long X Bridge Alternatives
Accommodate a mix of industrial, agricultural, and passenger traffic, while providing reasonable accommodations for oversized loads and ample passing opportunities for the traveling public	When coupled with Alt 4 for the Long X Bridge – provides for reasonable accommodations for over-sized loads.
Improve system linkage within the region and state by expanding the existing highway on essentially its current alignment to create a continuous four-lane highway from the I-94 interchange to US Highway 2	Provides for 4-lanes between I-94 and U.S. 2 interchange Does improve the flow of traffic. Does meet the purpose and need to provide a continuous system linkage with U.S. 85 north of Watford City
Improve safety along the project corridor for the traveling public	Improves safety, but does not address head-on collisions
Provide highway capacity to accommodate current and future traffic volumes	Does address current and future transportation needs
Satisfy transportation demands associated with the US Highway 85 corridor, while maintaining compatibility with federal land management agencies	Does address the transportation demands on the current roadway. However, does not address some of the safety concerns associated with the existing highway.
Improve roadway reliability by addressing current height and width restrictions associated with the Long X Bridge and slope stability and landslide issues along the roadway corridor	The Long X Bridge would be replaced with a larger structure, therefore, addressing concerns with over-sized loads.
Reduce the potential for wildlife/vehicle-related crashes, and minimize wildlife habitat fragmentation	Would still address wildlife connectivity although the benefits may be reduced from a wider highway for underpasses

4.9 ALTERNATIVE I: 6-LANE HIGHWAY

This alternative would use the existing alignment and expand the existing 2-lane highway to 6-lanes. Since the highway expansion would take place on the existing corridor, the impacts would be very similar to the other build alternatives using the existing highway (Alt B, C, D, E, and F). The impacts to WOUS would be slightly greater because of a wider highway. This alternative would meet the purpose and need, but would be excessive and is unnecessary based on current and future traffic projections.

Table 10: Alternative I matrix for addressing Purpose and Need

Purpose and Need	Alt I
Address social demands created by the rise in traffic volumes and influx of people, and facilitate economic development within the region by providing an efficient and reliable highway system	Would be excessive and unnecessary to meet current and future traffic projections; would not be a cost-effective solution.
Accommodate a mix of industrial, agricultural, and passenger traffic, while providing reasonable accommodations for oversized loads and ample passing opportunities for the traveling public	Does provide for opportunities to pass slow-moving vehicles. Long X Bridge would be replaced with at least a 4-lane bridge
Improve system linkage within the region and state by expanding the existing highway on essentially its current alignment to create a continuous four-lane highway from the I-94 interchange to US Highway 2	Does improve the flow of traffic. Does meet the purpose and need to provide a continuous system linkage with U.S. 85 north of Watford City
Improve safety along the project corridor for the traveling public	Improves safety, and does address head-on collisions or slow moving vehicles on roadway.
Provide highway capacity to accommodate current and future traffic volumes	Does address current and future transportation needs
Satisfy transportation demands associated with the US Highway 85 corridor, while maintaining compatibility with federal land management agencies	Does address the transportation demands on the current roadway.
Improve roadway reliability by addressing current height and width restrictions associated with the Long X Bridge and slope stability and landslide issues along the roadway corridor	The Long X Bridge would be replaced with a larger structure, therefore, addressing concerns with over-sized loads.
Reduce the potential for wildlife/vehicle-related crashes, and minimize wildlife habitat fragmentation	Would still address wildlife connectivity although the benefits may be reduced from a wider highway for underpasses

4.10 ALTERNATIVE J: ELEVATED ROADWAY

Alternative J would involve converting the existing U.S. 85 highway to one-way traffic and constructing an elevated roadway above the existing U.S. 85 highway with 2-lanes running in the opposite direction, very similar to I-70 between Grand Junction and Glenwood Springs in Colorado. Alternative J is an expensive alternative that does not adequately address the purpose and need of the project. Alternative J will not be carried forward in the Alternatives Analysis.

Table 9: Alternative J matrix for addressing Purpose and Need

Purpose and Need	Alt J
Address social demands created by the rise in traffic volumes and influx of people, and facilitate economic development within the region by providing an efficient and reliable highway system	Addresses increase in traffic volumes. May be problematic with snow removal.
Accommodate a mix of industrial, agricultural, and passenger traffic, while providing reasonable accommodations for oversized loads and ample passing opportunities for the traveling public	Would have height and width restrictions.
Improve system linkage within the region and state by expanding the existing highway on essentially its current alignment to create a continuous four-lane highway from the I-94 interchange to US Highway 2	Provides for 4-lanes between I-94 and U.S. 2 interchange Does improve the flow of traffic. Does meet the purpose and need to provide a continuous system linkage with U.S. 85 north of Watford City
Improve safety along the project corridor for the traveling public	Improves safety, but as above – could increase problems with snow removal.
Provide highway capacity to accommodate current and future traffic volumes	Does address current and future transportation needs
Satisfy transportation demands associated with the US Highway 85 corridor, while maintaining compatibility with federal land management agencies	Does address the transportation demands on the current roadway. Does address some of the safety concerns associated with the existing highway.
Improve roadway reliability by addressing current height and width restrictions associated with the Long X Bridge and slope stability and landslide issues along the roadway corridor	The Long X Bridge would be replaced with a larger structure, therefore, addressing concerns with over-sized loads. But the elevated roadway would create additional over-sized load restrictions
Reduce the potential for wildlife/vehicle-related crashes, and minimize wildlife habitat fragmentation	An elevated roadway would limit the constructability of wildlife over/under crossings.

4.11 ALTERNATIVE K: ONE-WAY PAIR

This alternative would utilize U.S. Highway 83 as a one-way with two-lanes and ND 22 as a one way with two lanes either north or southbound. Although it is recognized that this alternative was eliminated early in the scoping of the Draft EIS because of logistics

associated with residents that live along either highway, the Corps has determined that it would carry it forward as a minimal impact alternative. Alt D would have fewer impacts to WOUS and provide for safety because of the reduced head-on collisions that would occur on a one-way highway. It would also be relatively easy to implement without a large expenditure of money. However, the logistics may be problematic for locals who would have to travel further to access arterial roads to return home. This alternative will not be carried forward.

Table12: Alternative K matrix for addressing Purpose and Need

Purpose and Need	Alt K
Address social demands created by the rise in traffic volumes and influx of people, and facilitate economic development within the region by providing an efficient and reliable highway system	Alternative K does provide for increased current and future traffic volumes, but it fails to provide an efficient highway system. The traveling public would have to travel an additional 20 or 30 miles daily to access the one-way sections of U.S. 85.
Accommodate a mix of industrial, agricultural, and passenger traffic, while providing reasonable accommodations for oversized loads and ample passing opportunities for the traveling public	Would accommodate oversized loads with the replacement of the Long X Bridge.
Improve system linkage within the region and state by expanding the existing highway on essentially its current alignment to create a continuous four-lane highway from the I-94 interchange to US Highway 2	Provides for 4-lanes between I-94 and U.S. 2 interchange Does not improve the flow of traffic. Does not meet the purpose and need to provide a continuous system linkage with U.S. 85 north of Watford City
Improve safety along the project corridor for the traveling public	Improves safety as the one-way corridors would reduce head-on collisions.
Provide highway capacity to accommodate current and future traffic volumes	Does address current and future transportation needs
Satisfy transportation demands associated with the US Highway 85 corridor, while maintaining compatibility with federal land management agencies	Does address the transportation demands on the current roadway. Does address some of the safety concerns associated with the existing highway.
Improve roadway reliability by addressing current height and width restrictions associated with the Long X Bridge and slope stability and landslide issues along the roadway corridor	The Long X Bridge would be replaced with a larger structure, therefore, addressing concerns with over-sized loads.
Reduce the potential for wildlife/vehicle-related crashes, and minimize wildlife habitat fragmentation	Using the existing roadway with some improvements may not allow for wildlife structures to be built.

4.12 ALTERNATIVE L: CONSTRUCT A PIPELINE

Alternative L would construct an additional pipeline to the Bakken Oil Fields to alleviate some of the truck traffic on U.S. 85. This would not address the current and future traffic predicted to occur within the highway alignment. It would also not address the

safety concerns within the alignment and there would still be the potential for head-on collisions because of a lack of passing ability. This alternative does not take into account that much of the truck traffic is related to oilfield support services, which would continue even with a pipeline. Alternative L will not be carried forward for further analysis.

Table 10: Alternative L matrix for addressing Purpose and Need

Purpose and Need	Alt L
Address social demands created by the rise in traffic volumes and influx of people, and facilitate economic development within the region by providing an efficient and reliable highway system	Alternative L does not provide for increased current and future traffic volumes, and it fails to provide an efficient highway system.
Accommodate a mix of industrial, agricultural, and passenger traffic, while providing reasonable accommodations for oversized loads and ample passing opportunities for the traveling public	A pipeline does not address any current or future traffic volumes. It assumes that the driving factor is simply oil trucks transporting oil, which is not the case. Truck traffic associated with all oilfield services would still continue.
Improve system linkage within the region and state by expanding the existing highway on essentially its current alignment to create a continuous four-lane highway from the I-94 interchange to US Highway 2	Does not meet the purpose and need to provide a continuous system linkage with U.S. 85 north of Watford City
Improve safety along the project corridor for the traveling public	May reduce the truck traffic on the highway but not significantly.
Provide highway capacity to accommodate current and future traffic volumes	Does not address current and future transportation needs
Satisfy transportation demands associated with the US Highway 85 corridor, while maintaining compatibility with federal land management agencies	Does not address the transportation demands on the current roadway. Does not address the safety concerns associated with the existing highway.
Improve roadway reliability by addressing current height and width restrictions associated with the Long X Bridge and slope stability and landslide issues along the roadway corridor	Alt L does not provide a reliable transportation corridor that alleviates current and future height and width restrictions.
Reduce the potential for wildlife/vehicle-related crashes, and minimize wildlife habitat fragmentation	Does not reduce the probability of wildlife/vehicle related crashes.

4.13 ALTERNATIVE M: PUBLIC TRANSIT

Alternative M would provide for public transit within the 62-mile alignment. Many of the National Parks currently have some form of public transit available during the busy summer months (e.g., Zion, Yosemite, Denali and Bruce National Parks. This alternative would not address the long-term traffic demands of the corridor. Alternative M will not be carried forward in the alternatives analysis.

Table 11: Alternative M matrix for addressing Purpose and Need

Purpose and Need	Alt M
Address social demands created by the rise in traffic volumes and influx of people, and facilitate economic development within the region by providing an efficient and reliable highway system	Alternative L does not provide for increased current and future traffic volumes, and it fails to provide an efficient highway system.
Accommodate a mix of industrial, agricultural, and passenger traffic, while providing reasonable accommodations for oversized loads and ample passing opportunities for the traveling public	Public transit does not address any current or future traffic volumes. Public transit only addresses some of the privately owned vehicles and assumes that people, when given the opportunity, would prefer public transit. Many rural residents would still have to drive to get to a bus stop. This would cause some issues with logistics and require additional impacts from park and ride lots and bus stops.
Improve system linkage within the region and state by expanding the existing highway on essentially its current alignment to create a continuous four-lane highway from the I-94 interchange to US Highway 2	Does not meet the purpose and need to provide a continuous system linkage with U.S. 85 north of Watford City
Improve safety along the project corridor for the traveling public	May reduce the traffic on the highway but not significantly.
Provide highway capacity to accommodate current and future traffic volumes	Does not address current and future transportation needs
Satisfy transportation demands associated with the US Highway 85 corridor, while maintaining compatibility with federal land management agencies	Does not address the transportation demands on the current roadway. Does not address the safety concerns associated with the existing highway.
Improve roadway reliability by addressing current height and width restrictions associated with the Long X Bridge and slope stability and landslide issues along the roadway corridor	Alt M does not provide a reliable transportation corridor that alleviates current and future height and width restrictions.
Reduce the potential for wildlife/vehicle-related crashes, and minimize wildlife habitat fragmentation	Does not reduce the probability of wildlife/vehicle related crashes.

5.0 ALTERNATIVES ANALYZED IN DETAIL

5.1 ALTERNATIVES CONSIDERED BUT REJECTED

Table 16 provides a summary of the several of the alternatives discussed in Section 4.0 that do not meet the Corps criteria and will not be carried forward for further analysis. These alternatives, for a variety of reasons, do not meet the applicant's purpose and need and are either cost prohibitive or logistically not feasible. Alternatives carried forward will be addressed in Section 5.2.

Table 12: Alternatives considered but rejected.

Practicability Category	Factor	Alt D: Super 2 Highway with passing and turning lanes	Alt E: Rehabilitation of existing roadway with wider shoulders	Alt G: 4-Lane outside existing alignment 1-2 miles away	Alt H: 4-Lane outside existing alignment with two lanes; 1-2 miles away	Alt I: 6-lane highway	Alt J: Elevated Roadway	Alternative K: One-way pair	Alternative L: Pipeline construction	Alternative M: Public transit
Meet the Overall Project Purpose		No - Turning and passing lanes already exist and pose safety concerns	No - Shoulder widening does not address safety on the roadway	Yes	Yes	Yes	Yes	Yes	No	No
Available	Available for Acquisition	Yes - ROW already owned by NDDOT	Yes - ROW already owned by NDDOT	Yes - with the purchase of a new corridor	Yes - with the purchase of a new corridor	Yes - with the purchase of a new corridor	Yes – no additional right-of-way required	Yes – no additional right-of-way required	Yes	Yes – may require additional right-of-w park and ride lots
Logistics	Utilization of existing road and Right of Way (ROW)	Yes - ROW already owned by NDDOT and on existing roadway	Yes - ROW already owned by NDDOT and on existing roadway	No - Requires new corridor and new roadway	Yes - with one 2 lane portion on existing alignment and on constructed 1-2 miles away	Yes – would use the existing 2-lane highway	Yes – would use the existing 2-lane highway	Yes – would use the existing 2-lane highway	No – requires outside commitment from oil industry	Yes
	Access to Theodore Roosevelt National Park	Yes - using existing access	Yes - using existing access	Yes - with the original U.S. Highway 85 corridor maintained	Yes - with the original U.S. Highway 85 corridor maintained	Yes - with the original U.S. Highway 85 corridor maintained	Yes - with the original U.S. Highway 85 corridor maintained	No – does not provide direct access to TRNP from the one-way section going north. Would require additional construction and renovations to existing arterials.	NA	Yes
	Consistent with other design/standards	No - with current and future traffic projections	No - with current and future traffic projections	Yes	Yes	Yes	Yes	Yes	NA	No
	Safety concerns relative to increased traffic volumes on Highway 85	No - Turning and passing lanes already exist and pose safety concerns	No - Shoulder widening does not address safety on the roadway	Yes	Yes	Yes	Yes	Yes	No – does not address any safety concerns	No – does not address any safety conc Does reduce private vehicle usage
	Minimal impacts to existing utilities	Yes - utilities shifted within the ditch section	Yes - utilities shifted within the ditch section	Yes - with the original Highway 85 corridor maintained	Yes - with the original U.S. Highway 85 corridor maintained	Yes - with the original U.S. Highway 85 corridor maintained	Yes - with the original U.S. Highway 85 corridor maintained	Yes – highways exist and could be retrofitted for one-way traffic	Yes	Yes

U.S. Highway 85, I-94 Interchange to Watford City Bypass
SECTION 404(b)(1) ALTERNATIVES ANALYSIS

Existing Technology	Topography and other site conditions feasible for project construction	Yes- with the stabilization of specific sections in the Badlands	Yes - with the stabilization of specific sections in the Badlands	Yes - with the stabilization of specific sections in the Badlands	Yes - with the stabilization of specific sections in the Badlands	Yes - with the stabilization of specific sections in the Badlands	No – may limit the design capabilities in elevating the highway. Would be problematic for snow removal	Yes – feasible to construct	NA – no additional information was provided as to the location of the pipeline	Yes
Cost	Reasonable acquisition costs	Yes	Yes	No - requires the purchase of a new project corridor	No - requires the purchase of a new project corridor	No - requires the purchase of a new project corridor	Yes	Yes	NA – would be a decision of the oil industry. This would not be a DOT issue	Yes – assuming that the cost of adding lines is no more expensive than a new highway
	Overall scope/project	Yes - ~1.7 million	Yes - ~2.7 million	No - Costs exorbitant for a new roadway potentially $600/Million+	No - Costs exorbitant for a new roadway potentially $600/Million+	No - Costs exorbitant for a new roadway potentially $600/Million+	No - Costs exorbitant for the construction of an elevated roadway - $600/Million+	No -	No	No

5.2 ALTERNATIVES CARRIED FORWARD

Table 17 includes those alternatives carried forward in the 404(b)(1) analysis. All alternatives are located within the existing alignment but have various widths associated with the median. The existing alignment with an undivided highway is being carried forward, but does not meet the purpose and need of the project from a safety perspective. However, it does provide, along with Alt A, a good baseline for comparison to the divided, depressed median and the divided flush median.

Table 13: Alternatives carried forward for further consideration.

Practicability Category	Factor	Alt A: No Action	Alt B: 4-Lane Section on existing alignment - Divided depressed median w/options *Preferred*	Alt C: 4-Lane Section on existing alignment - Divided flush median w/options	Alt F: 4-Lane section on existing alignment undivided
Meet the Overall Project Purpose		No - Current traffic conditions would remain and worsen in the future	Yes	Yes	No - would not address safety
Available	Available for Acquisition	Yes - ROW already owned by NDDOT	Yes - with minimal expansion of existing ROW	Yes - with minimal expansion of existing ROW	Yes - ROW already owned by NDDOT
Logistics	Utilization of existing road and Right of Way (ROW)	Yes - ROW already owned by NDDOT and on existing roadway	Yes - Utilizes existing road, with some new ROW required	Yes - Utilizes existing road, with some new ROW required	Yes - ROW already owned by NDDOT and on existing roadway
	Access to Theodore Roosevelt National Park	Yes - using existing access	Yes - using existing access	Yes - using existing access	Yes - using existing access
	Consistent with other design/standards	No - with current and future traffic projections	Yes	Yes	No - would not meet median design criteria
	Safety concerns relative to increased traffic volumes on Highway 85	No - Current traffic conditions would remain	Yes	Yes	No - increased accident potential with no median
	Minimal impacts to existing utilities	Yes - no impacts to utilities	Yes - utilities shifted within the ditch section	Yes - utilities shifted within the ditch section	Yes - utilities shifted within the ditch section
Existing Technology	Topography and other site conditions feasible for project construction	Yes - with the stabilization of specific sections in the Badlands	Yes - with the stabilization of specific sections in the Badlands	Yes - with the stabilization of specific sections in the Badlands	Yes - with the stabilization of specific sections in the Badlands
Cost	Reasonable acquisition costs	Yes	Yes	Yes	Yes
	Overall scope/project	Yes - no additional cost with no action alternative	Yes – 419 Million without options	Yes – 389 Million without options	Yes - ~9.8 million

6.0 EXISTING SITE CONDITIONS (NDDOT 2018a)

The U.S. Highway 85 project corridor contains numerous uniquely distinct features and landscapes that collectively form the overall project setting.

Please refer to Figure 1 below, which illustrates the reference points (RP) along the project corridor. The RPs are grouped into seven setting areas for ease of discussion of the varying landscape along the corridor. An example of typical topography within each setting area is shown in the following subsections.

Figure 4: US Highway 85 Setting Areas

6.1 SETTING AREA 1: RP 75.7 TO RP 91.4

The southern end of the project corridor begins at the I-94 interchange, along the northern edge of the City of Belfield. According to the U.S. Census Bureau, in 2016, the estimated population of Belfield was 1,013 individuals (U.S. Census Bureau 2016a). Like many towns in western North Dakota, Belfield has experienced population and economic growth over the past 10 years as the result of oil and gas development. The I-94 interchange is a significant traffic volume contributor to U.S. Highway 85, north of Belfield. Average daily traffic (ADT) volumes along U.S. Highway 85, north of the I-94 interchange, are nearly double the ADT volumes along U.S. Highway 85, south of the I-94 interchange.

Progressing north from Belfield, the landscape is dominated by rolling hills with occasional residential homes and farmsteads, and oil and gas well pads scattered throughout. Land use along this stretch of the corridor is primarily cropland with pasture land interspersed. The South Branch of the Green River crosses the corridor approximately 13 miles north of Belfield, while wetlands and minor drainages are located sporadically throughout. Property ownership adjacent to this segment of the project corridor is entirely private.

6.2 SETTING AREA 2: RP 91.4 TO RP 92.0

Approximately 16 miles north of Belfield is the small unincorporated community of Fairfield. According to the U.S. Census Bureau, in 2015, the estimated population of Fairfield and the surrounding area was 190 individuals (U.S. Census Bureau 2015a). The community of Fairfield is bisected by U.S. Highway 85 with residential and commercial properties located on both sides. Notable places within Fairfield include Prairie Elementary School, Billings County Rural Fire Hall, Fairfield Post Office, and Club 85. Currently, posted speed limits along U.S. Highway 85 are reduced from 65 miles per hour (mph) to 45 mph through Fairfield. This is the only community located along the project corridor that is currently subject to speed limit reductions.

6.3 SETTING AREA 3: RP 92.0 TO RP 107.6

Continuing north from Fairfield, the landscape begins to transition gradually from primarily cropland to a mixture of cropland and pasture land. Exposed buttes and deeper drainages emerge as the landscape begins to show signs of erosional influences associated with the Little Missouri River. In contrast to the project corridor occurring south of Fairfield, the project corridor occurring north of Fairfield is bordered by a combination of private and publicly-owned property under the management of the U.S. Forest Service (USFS).

6.4 SETTING AREA 4: RP 107.6

Approximately 16 miles north of Fairfield, North Dakota Highway 200 (ND-200) intersects U.S. Highway 85. This is the only major highway intersection along the project corridor. ND-200 runs east from this intersection to Killdeer, where it intersects with ND 22. Similar to I-94, ND-200 is another significant traffic volume contributor to U.S. Highway 85. The 2017 ADT volumes along US Highway 85 increase from 3,880 vehicles per day, south of the ND-200 intersection, to 4,680 vehicles per day, north of the ND-200 intersection; an approximate 21 percent increase (NDDOT 2017a). Infrastructure around this intersection includes the Sweet Crude Travel Center, located in the southeastern corner of the intersection, as well as numerous overhead utility lines.

6.5 SETTING AREA 5: RP 107.6 TO RP 121.4

The landscape north of ND-200 remains relatively consistent for the next 14 miles, containing a mixture of cropland and pasture land with both private and public land ownership. Located along this stretch of the project corridor is the unincorporated town of Grassy Butte. Unlike Fairfield, Grassy Butte is located entirely along the western side of US Highway 85 and is not bisected by the roadway. According to the U.S. Census Bureau, in 2015, the estimated population of Grassy Butte and the surrounding area was 175 individuals (U.S. Census Bureau 2015a). Two notable places within Grassy Butte include the Grassy Butte Post Office, which is listed on the National Register of Historic Places (NRHP), and St. Peter Canisius Catholic Church.

6.6 SETTING AREA 6: RP 121.4 TO RP 130.0

Approximately 9 miles north of Grassy Butte, the landscape of the project corridor changes abruptly as it enters the Badlands. The Badlands are characterized by highly eroded buttes and hillsides composed of soft silts and clays with sparse vegetation. The total length of the project corridor occurring within the Badlands is approximately 7 miles. Topographic relief in this area changes quickly as the roadway descends more than 600 feet to reach the Little Missouri River, before ascending more than 400 feet on the north side of the Little Missouri River to climb back out of the Badlands. Soils within this region are historically unstable due to their composition of soft silts and clays, making the area susceptible to landslide activity. Landownership through the Badlands is a mixture of private and public. Public property includes the LMNG (managed by the USFS) and the TRNP – North Unit (managed by the NPS).

Contained within this segment is the historic Long X Bridge, which carries U.S. Highway 85 over the Little Missouri River. The Long X Bridge was constructed in 1959 and is approximately 970 feet long. The structure has been determined eligible for listing on the National Register of Historic Places (NRHP). Over the past 10 years, numerous over-height vehicle collisions have damaged the portals and overhead cross members.

6.7 SETTING AREA 7: RP 130.0 TO RP 139.5

Continuing north from the Badlands, the landscape transitions back to a mixture of cropland and pasture land with entirely private land ownership. Spring Creek crosses the corridor approximately 2 miles south of McKenzie County Road 30. Development becomes increasingly prevalent as the corridor nears the Watford City Bypass, located just south of the town of Watford City. Construction of the Watford City Bypass was completed in 2015 and consists of a four-lane, divided highway with a flush, center median. The project would tie into the Watford City Bypass, whereby providing a continuous four-lane highway along U.S. Highway 85 from the I-94 interchange to Williston.

6.8 EXISTING SITE CONDITIONS (AQUATIC RESOURCE FUNCTIONS)

Surface Water Storage: Surface water storage refers to the ability of a watercourse to provide long and short-term surface storage which allows soil saturation (moisture), provides seasonal ponding for nutrient cycling and habitat for aquatic organisms, reduces the peak flood discharge, and improves downstream water quality through detention of flows. Within the project area, wetland depressions provide some surface water storage functions on the landscape. Impoundments are located throughout the project corridor and also provide surface water storage, typically utilized for ranching activities.

Energy Dissipation: The degree of the energy of water is determined by slope, geometry, and the roughness of the stream. Lower stream energy is associated with lower velocity which, in turn, reduces the movement of particulates, prevents high erosion, and improves water quality (Levick et al. 2008). As flow velocity decreases from higher gradient to lower gradient streams with larger floodplains, more energy dissipation occurs. Energy dissipation functions would be seen in aquatic resources such as the Little Missouri River with perennial flow and intermittent tributaries found throughout the project area. Energy dissipation functions are likely moderate to minimal, depending on specific areas along U.S. Highway 85. The southernmost portion of the project possesses gradual gradients where little energy dissipation is necessary. In the North portion of the project, steeper gradients are present within other tributaries to the Little Missouri River. The badlands consists of rigorous terrain with intermittent tributaries. As a result of the steep gradients within the badlands, tributaries rely on natural meanders to reduce the impact water has on the landscape. However, the badlands area contains highly erodible soils resulting in downstream sedimentation.

Groundwater Recharge: Wetlands in the semi-arid northern prairie region are focal points for groundwater recharge (Van der Kamp and Hayashi 1998). Recharge of groundwater occurs within wetland depressions throughout the project corridor. In the 1998 study, Van der Kamp and Hayashi found that connections are continuous between ponded water in wetlands and the surrounding water table. The Little Missouri River and its tributaries in the project area also provide

groundwater recharge functions. Although groundwater recharge in streams may be different than palustrine emergent wetlands, they all provide vital groundwater recharge functions from an ecological and watershed perspective.

Sediment transport: Sediment transport in streams is based on several site specific factors which include flow magnitudes and frequency, along with sediment mobility. Lower gradient streams store sediment in low to medium flow events but provide more significant sources of sediment during high events. Typical of the intermittent and ephemeral tributaries to the Little Missouri River in the badlands, the highly erodible soils increase turbidity during heavy precipitation events. Sedimentation can be problematic and often occurs in lowland areas or near constructed structures where velocities are reduced and the sediment load is dropped. Sediment can be deposited within culverts and corrugated pipes. These are regularly cleaned out during roadway maintenance.

Biogeochemical nutrient cycling: Specific functions of biogeochemical processes include nutrient cycling and removal, detention, and exportation of elements, compounds, and particulates (Levick et al. 2008) and is dependent on organic matter inputs and water/sediment contact. The greater the organic matter input and water/sediment contact, the greater the occurrence of biogeochemical processes. Particulates detained in depositional areas within the floodplain allow for increased storage of elements, compounds, and particulates and increased nutrient processing (Levick et al. 2008). Biogeochemical nutrient cycling is typically greater in lower gradient streams due to the increased length of time water and sediment are in contact. Lower gradient systems can be found within the U.S. Highway 85 project area and nutrient cycling is a major function of aquatic resources located in this region. Perennial and intermittent streams provide the cycling, removal, and exportation of elements, compounds and particulates. Wetland basins on the landscape function as detention ponds which store particulates and also break down elements and compounds.

Organic carbon export and storage: Export of organic carbon provides a primary source of energy for downstream food chains (Levick et al. 2008). Headwater streams and floodplain channels store large amounts of carbon from plant matter which is, subsequently, transported downstream during heavy precipitation events. Upland and riparian vegetation adjacent to these headwater streams and their associated floodplains is a source of carbon. Vegetation is established adjacent to the Little Missouri River and other aquatic resources throughout the project area. Carbon storage also occurs within wetlands and this function is provided within the wetland basins adjacent to the proposed project.

Habitat connectivity/structure: Streams with riparian corridors provide diverse plant communities and habitat for various types of organisms. Within the project area, no riparian habitat exists in areas such as the Little Missouri River. As previously discussed, habitat connectivity is a major consideration for the EIS. The corridor would be maintained in a manner to provide the necessary habitat and structure for both aquatic and terrestrial organisms utilizing the area.

7.0 IMPACT ANALYSIS

The following discussion evaluates the direct and secondary impacts of Alternatives B, C and F on environmental resources identified in subparts C through F of the Section 404(b)(1) Guidelines.

7.1. PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE AQUATIC ECOSYSTEM

Pursuant to 40 CFR Part 230 subpart C these characteristics consist of substrate, current patterns and water circulation, suspended particulates, water, and normal water fluctuations.

7.1.1. SUBSTRATE

The substrate of the aquatic ecosystem underlies the open waters of the United States and constitutes the surface of wetlands. It consists of organic and inorganic solid materials and includes water and other liquids or gases that fill the spaces between solid particles. The discharge of dredged or fill material can change the physical, chemical, and biological characteristics of the substrate through a variety of mechanisms, including changes in substrate elevation and resulting changes in circulation, depth, currents, water fluctuations, and temperature; smothering immobile organisms or causing mobile animals to emigrate; changing substrate characteristics that affect recolonization; and the outright destruction of habitat.

The existing substrate varies throughout the corridor. Wetland basins are composed of loamy/clay soils with emergent and submerged vegetation. The basins contain high volumes of organic matter, as vegetation continually breaks down. Throughout the Badlands portion of the project, sands and clays provide a large portion of the substrate found in and adjacent to the Little Missouri River.

Alternative A: The "No Action" alternative would have no effect on the substrate found within the existing alignment. The dynamics of sediment movement within the river channel and across the floodplain wetlands would persist in the future as they currently exist. With No-Action, while the character of the substrate in any particular location can be expected to vary over time in response to episodic events, the substrate in the Study Area as a whole is expected to retain a similar range and relative abundance of sediment-substrate types and to continue along the recent trajectory of improving water quality and higher macro-invertebrate diversity.

Impacts common to All Build Alternatives (B, C and F): All build alternatives follow the existing alignment. The primary direct, permanent impact to substrate occurs as native substrate is removed and replaced with materials suitable for road construction such as clay for embankments, gravel under culverts, riprap for erosion control and corrugated metal and concrete culverts for water movement. Temporary impacts would occur as structures are constructed for dewatering and access, or by equipment movement adjacent the footprint of the roadway embankments. As stated above, temporarily impacted areas would be restored to preconstruction elevation and condition following construction. Minor, long term effects will result in areas permanently impacted. Minor, short term effects will result in areas temporarily impacted.

Alternative B: Approximately 14.04 acres of jurisdictional wetlands would be permanently filled and an additional 10.29 acres would be temporarily impacted. In addition, 538 Linear Feet (LF) of streams would be permanently impacted and an additional 2,930 LF would be temporarily impacted.

Alternative C: Approximately 9.97 acres of jurisdictional wetlands would be permanently impacted and an additional 9.33 acres will be temporarily impacted. In addition, 475 LF of streams would be permanently impacted and an additional 2,976 LF would be temporarily impacted.

Alternative F: Approximately 7.86 acres of jurisdictional wetlands would be permanently impacted and an additional 5.76 acres would be temporarily impacted during construction. In addition, 266 LF of streams would be permanently impacted and an additional 1667 LF would be temporarily impacted.

Conclusion: The kind of impacts associated with the build alternatives does not change. The amount of impact would be greater with Alt B because of the wider median width. Alternative C would result in less impacts as the footprint required to widen the roadway section and construct a flushed median is narrower than required to construct a depressed median as proposed for Alternative B. Alt F has a smaller footprint because there is only a 4-6-ft median.

7.1.2. SUSPENDED PARTICULATES/TURBIDITY

Suspended particulates consist of fine-grained (silt and smaller) mineral and organic particles. They enter the water through natural processes and human activities including dredging and filling, and remain suspended for variable periods depending on agitation of the water mass and the physical and chemical properties of the sediments. The concentration of suspended sediments is indicated by turbidity. Under the Guidelines, consideration is given to the manner (timing, magnitude, and duration) in which dredge and fill activities may directly or indirectly increase sediment input to the aquatic ecosystem, and the resulting effects on properties including but not limited to light penetration, photosynthesis, and primary production; oxygen depletion and its overall effects on aquatic biota; on the physiology and behavior of fish and invertebrates; and on the aesthetic appearance of the water body.

In the project corridor, aquatic resources frequently experience rises in turbidity and suspended particulates during heavy rain events. The northernmost portion of the project is prone to flash floods and fast moving water.

Alternative A: Under the No-Action Alternative, concentrations of suspended sediments in the river and wetlands in the floodway would fluctuate within historic norms. Sediment would continue to be mobilized by high flows, but retained within the banks of the river channel except during rare and relatively brief episodes of overbank flooding. Wetlands in the floodway would continue to experience pulses of sediment in runoff during heavy rain and high flows.

Impacts common to both alternatives (B, C and F): Similar impacts would occur regardless of alternative being evaluated. Both alternatives follow the same alignment, impact the same waterways and wetlands, and use the same construction methodology and materials. Distance from the discharge area where particulates are suspended in the water column to the deposition area where water slows down and particulates fall out would be dependent upon topography and flow velocity. Aquatic species and vegetation could be smothered downstream in the deposition area. Both alternatives would

require individual Water Quality Certification under Section 401 of the Clean Water Act (WQC) and a SWPPP. Special conditions of the permit would require compliance with WQC and SWPPP, as well as any other Best Management Practices (BMPs) necessary to contain turbidity on-site.

Conclusion: Regardless of the alternative selected as the LEDPA, impacts from suspended sediments/turbidity would be similar.

7.1.3 WATER

Under the Guidelines, water clarity, nutrients and chemical content, physical and biological content, dissolved gas levels, pH, and temperature are all important aspects of surface water quality that contribute to its life-sustaining capabilities. The discharge of dredged or fill material can change the chemistry and physical characteristics of the receiving water through the introduction of chemical constituents in suspended or dissolved form. Changes in the clarity, color, odor, and taste of water and the addition of contaminants can reduce or eliminate the suitability of water bodies for populations of aquatic organisms and for human consumption, recreation, and aesthetics.

Alternative A: With the "No Action" alternative water would continue to flow in response to rain events and during spring melt.

Impacts common to All Build Alternatives (B, C and F): All alternatives would have similar impacts to water resources. The alternatives have various widths of medians, but the impacts occur to the same resources and would have similar impacts only on a progressively larger scale from Alternative B with the greatest impacts, to Alternative F with the least. Project construction would minimize potential impacts to surface water quality with implementation of a project specific Stormwater pollution prevention plan and associated BMBs.

Conclusion: The kind of impacts associated with the build alternatives does not change. The amount of impact would be greater with Alt B because of the wider median width. Alternative C would result in less impacts as the footprint required to widen the roadway section and construct a flushed median is narrower than required to construct a depressed median as proposed for Alternative B. Alt F has a smaller footprint because there is only a 4-6-ft median.

7.1.4. CURRENT PATTERNS AND WATER CIRCULATION

Current patterns and water circulation are the physical movements of water in the aquatic ecosystem. Currents and circulation respond to natural forces as modified by basin shape and cover, physical and chemical characteristics of water strata, and energy dissipating factors. The discharge of dredged or fill material can obstruct flow or change its direction and velocity, affecting erosion and deposition rates; the mixing of dissolved and suspended components of the water; water stratification; and the location, structure, and dynamics of aquatic communities.

Current patterns and water circulation would be effected, both temporarily and permanently on a minor scale. During construction on rivers, streams and drainage features various activities would require the use of temporary cofferdams or bypasses. Water would be temporarily redirected or pumped downstream to maintain flows, but patterns would be restored upon construction completion. Circulation patterns in wetlands will be permanently impacted by fill.

Alternative A: With the "No Action" alternative current patterns and water circulation would remain as they are today and there would be no effect.

Impacts common to All Build Alternatives (B, C and F): Culverts at all locations, regardless of alternative, would be placed to maintain existing flow lines and waterway slope.

Permanent impacts to current patterns of the Little Missouri River will occur when the Long X Bridge is replaced and bridge piers are constructed. Temporary impacts will occur as access pads/roads and cofferdams are used to facilitate construction of the bridge piers.

Conclusions: Very similar impacts will occur regardless of the alternative selected. The only measureable difference is the length of pipe waterways would flow through and amount of wetland permanently filled.

7.1.4. NORMAL WATER LEVEL FLUCTUATIONS

Normal water fluctuations in a natural aquatic system consist of daily, seasonal, and annual tidal and flood fluctuations in water level. Biological and physical components of such a system are either attuned to or characterized by these periodic

water fluctuations. Discharges of dredged or fill material can alter the normal water-level fluctuations, resulting in prolonged periods of inundation, exaggerated extremes of high and low water, or a static, non-fluctuating water level. Such modifications can affect the physical characteristics of the system in numerous ways and can alter or destroy ecological communities, induce populations of nuisance organisms, modify habitat, reduce food supplies, and restrict movement of aquatic fauna, destroy spawning areas, and change adjacent upstream and downstream areas.

WOUS in the project area include wetland depressions and perennial, intermittent, and ephemeral streams. As previously discussed, the Little Missouri River is a lower perennial stream that connects with the Missouri River. Water levels are typically low on a daily basis during summer months with the exception of large rain events. Flash flooding in the Badlands is a common event. The intermittent and ephemeral streams throughout the project area receive hydrology during seasonal snow melt and heavy rain events. Linear wetland depressions that are located in relatively flat areas provide downstream flows gradually. Low flow tributaries in North Dakota are sometimes referred to as linear wetlands as they frequently contain wetland vegetation throughout the channel.

Alternative A: Under the No Action alternative, there would be no major changes to the floodplain geometry and water fluctuations would continue to be primarily influenced by rain events and spring snow-melt.

Impacts common to All Build Alternatives (B, C and F): All alternatives follow the existing alignment and areas that require culverts likely already have one in place. Unless the culverts are not properly sized, they will likely be extended as far as necessary to accommodate construction. No measureable permanent change in daily, seasonal or annual fluctuations should result. In areas where fill is placed in a depressional basin, storage capacity of the basin will be reduced and water levels would be increased. Temporary structures, such as cofferdams and bypasses, could cause changes in water fluctuations for as long as they are in place if not properly designed.

Conclusions: All build alternatives are anticipated to permanently affect daily, seasonal, or annual fluctuations in water level, but may temporarily influence water level fluctuations in the immediate vicinity of work areas during construction. Regardless of the alternative, temporary impacts to water level fluctuations would be minor and localized. Special conditions for maintenance of flows and removal of temporary fills would be required to minimize impacts during construction activities and to ensure the restoration of the area to original contours.

7.2. BIOLOGICAL CHARACTERISTICS OF THE AQUATIC ECOSYSTEM

Pursuant to 40 CFR Part 230 subparts D and E, these characteristics consist of special aquatic sites, fish, crustaceans, mollusks, and other aquatic organisms, and wildlife values. This section also discusses the biological availability of contaminants which has impacts to biological characteristics as well as human use characteristics.

7.2.1. THREATENED AND ENDANGERED SPECIES

An endangered species is one that is in danger of extinction throughout all or a significant portion of its range, whereas a threatened species is one that is in danger of becoming endangered in the foreseeable future. Possible effects of the discharge of dredged or fill material include covering or otherwise directly killing individuals; the impairment or destruction of habitat and the resources (food, shelter, etc.) it provides; and facilitating incompatible activities.

FHWA and NDDOT have identified several threatened and endangered species within the DEIS and evaluated each species for potential impacts associated with the development of a 4-lane roadway. The scope of analysis for FHWA and NDDOT encompasses the entire 62-mile corridor from Belfield to Watford City. No designated critical habitat was listed as occurring along the corridor. The species being evaluated can be found in the table below.

Table 14: Threatened and Endangered Species (USFWS)

Species Name	ESA Status	Habitat Requirements	Presence/Absence in Project Area
Black footed-ferret (*Mustela nigripes*)	Endangered	Rely exclusively on prairie dog burrows for shelter which are located within grasslands found in North Dakota.	Absent- Believed to be extirpated from ND. Associated exclusively with prairie dog towns. Potential habitat within the project corridor (NDGF 2016)
Gray wolf (*Canis lupus*)	Endangered	Wolves are habitat generalists and live throughout the northern hemisphere. They require ungulate prey and non-excessive human-caused mortality rates.	Present - The gray wolf has the potential to be within the project area during construction. There are areas of the Badlands that provide habitat for the gray wolf.
Whooping crane (*Grus americana*)	Endangered	The whooping crane breeds, migrates, winters, and forages in a variety of wetland and other habitats, including coastal marshes and estuaries, inland marshes, lakes, ponds, wet meadows and rivers, and agricultural fields. Whooping cranes breed and nest in wetland habitat in Wood-Buffalo National Park, Canada. Bulrush is the dominant vegetation type in the potholes used for nesting, although cattail, sedge, musk-grass, and other aquatic plants are common. Nest sites are primarily located in shallow diatom ponds that contain bulrush. During migration, whooping cranes use a variety of habitats; however, wetland mosaics appear to be the most suitable. For feeding, whooping cranes primarily use shallow, seasonally and semi permanently flooded palustrine wetlands and various cropland and emergent wetlands. In Nebraska, whooping cranes also often use riverine habitats. Wintering habitat in the Aransas National Wildlife Refuge, Texas, includes salt marshes and tidal flats on the mainland and barrier islands, dominated by salt grass, saltwort, smooth cord-grass, glasswort, and sea ox-eye.	Present – suitable habitat exists within the project area for whooping crane. The project area is located in the primary migration path of the whooping crane.
Interior least tern (*Sterna antillarum*)	Endangered	Primary habitat includes sandy shores and beaches or rocky shores that are dry. Sparsely vegetated sand, shell, and gravel beaches, sandbars, islands, and salt flats associated with rivers and reservoirs.	Absent – the Interior least tern is found along the main stem of the Missouri River. There is no suitable habitat within the project area.
Pallid sturgeon (*Scaphirhynchus albus*)	Endangered	Large rivers such as the Missouri and Mississippi. They utilize floodplains, backwaters, chutes, sloughs, islands, sandbars, and main channel waters within a large river ecosystem. They prefer substrate composed of sandy and fine bottom materials.	Absent – the pallid sturgeon is limited to the Missouri and Yellowstone Rivers
Northern long-eared bat (*Myotis septentrionalis*)	Threatened	During summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. 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 suitability to retain bark or provide cavities or crevices. It has also been found, rarely, roosting in structures like barns and sheds. Northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. They typically use large caves or mines with large passages and entrances; constant temperatures; and high humidity with no air currents. Specific areas where they hibernate have very high humidity, so much so that droplets of water are often seen on their fur. Within hibernacula, surveyors find them in small crevices or cracks, often with only the nose and ears visible.	Present - Documented occurrence within the project area (NDDOT 2017).

Piping plover (*Charadrius melodus*)	Threatened	Primary habitat includes sandy shores and beaches or rocky shores that are dry. Sparsely vegetated sand, shell, and gravel beaches, sandbars, islands, and salt flats associated with rivers and reservoirs.	Absent – the Piping Plover is not known to occur within the Little Missouri River corridor.
Rufa red-knot (*Calidris canutus rufa*)	Threatened	Shorebird utilizing beaches and islands found along rivers and on large reservoirs.	Absent – similar habitat to that of the Piping plover. Occurs within the Missouri River corridor. Has also been identified on large, permanent lakes and wetlands. No suitable habitat within the project area.
Dakota skipper (*Hesperia dacotae*)	Threatened	Lives in high-quality mixed and tall grass prairies	Present – suitable habitat exists adjacent to the project area.

Alternative A: Under the No Action alternative, there would be no major changes to impacts on listed species.

Impacts common to All Build Alternatives (B, C and F): All build alternatives considered in detail would have the similar impacts to threatened and endangered species within regulated WOUS as all three alternatives remain along the same alignment and would impact the same aquatic resources in a similar manner. A Programmatic Biological Assessment (PBA) was completed on May 8, 2017, and included the effect determinations for protected species. A "No Effect" determination was made by FHWA and NDDOT for the Interior least tern, Black-footed ferret, Pallid sturgeon, Rufa red knot and Piping plover. A "No Effect" was also made for the designated critical habitat of Piping plover and Dakota skipper. A "May Affect, Not Likely to Adversely Affect" determination has been made Whooping crane, Gray wolf, and the Dakota Skipper. The Northern long-eared bat received a determination of "May Affect" and has been covered under the 4(d) Rule Streamlined Consultation process with FHWA and NDDOT.

Conclusions: The three build alternatives would have similar impacts as the same material and work would be completed in order to construct the roadway. Conservations Measures have been addressed in the DEIS on each species to ensure protection of the species during construction windows. These CM's are also included in project plans for general contractors and project engineers. The Corps also accepts the determinations made by FHWA and NDDOT through the PBA as the Corps action area is located within the FHWA designated action area.

7.2.2. FISH, CRUSTACEANS, MOLLUSK, AND OTHER AQUATIC ORGANISMS

As defined in 40 CFR 230.31, aquatic organisms in the food web include, but are not limited to, fin fish, crustaceans, mollusks, insects, annelids, planktonic organisms, and the plants and animals they feed and depend on to thrive. Releases of contaminants through discharge of dredged or fill material can adversely affect adults, juveniles, larvae or eggs. Suspended particulates can bury eggs, preventing receipt of oxygenated water. They can also cause debilitation or death to less mobile organisms by smothering and/or direct exposure to chemical contaminants contained within the dredged materials.

The Little Missouri River and other aquatic resources such as wetlands and impoundments, support numerous aquatic resource species. Macro and micro invertebrates are present within the Little Missouri River, providing foraging opportunities for fish species which also occur in larger perennial river systems. Macro and micro invertebrates are also present within the wetlands and vegetated shallows. These organisms are important in supporting the overall functions provided by wetlands. Invertebrates also provide foraging opportunities for various waterfowl, shorebirds, and water bird species within the state of North Dakota including, but not limited to, American bittern (*Botaurus lentiginosus*), American avocet (*Recurvirostra americana*), Horned grebe (*Podiceps auritus*), Piping plover (*Charadrius melodus*), Least tern (*Sterna antillarum*), Mallard (*Anus platyrhynchos*), Bufflehead (*Bucephala albeola)*, Northern pintail (*Anas acuta*), Canada goose (*Branta canadensis*), Greater white-fronted goose (*Anser albifrons*), and Lesser snow goose (*Chen caerulescens*). The propose project is located in the secondary range of most of these species.

Alternative A: The distribution of fish and other aquatic species under the No-Action Alternative would be similar to the distribution of aquatic species as described under existing conditions. Common fish and invertebrates would continue to utilize the aquatic riverine, emergent wetland, and open water habitats.

Impacts common to All Build Alternatives (B, C and F): Under the guidelines, the focus is on the manner in which discharge of dredged or fill material can affect the overall productivity and nutrient export capability of the ecosystem. More specifically, discharge of dredged or fill material can possibly redirect, delay, or stop the reproduction and feeding movements of some species of fish and crustaceans, thus preventing their aggregation in accustomed places such as spawning and nursery grounds and potentially leading to reduced populations. Further, reduction of lower trophic level producers (i.e., detrital species) can impact the flow of energy from primary consumers to higher trophic levels (40 CFR 230.31b). Alternatives B, C and F would result in similar kinds of impacts as they would all occur on the same alignment and result in a discharge of the same material. The difference between the three alternatives exists in the necessary footprint to construct the new roadway. Alternative B requires a wider footprint which would result in slightly more impacts to aquatic resources in the project area. Both short and long-term minor effects on fish, crustaceans, mollusks, and other aquatic organisms would occur. The footprint of fill and conversion of aquatic resources to uplands would reduce the size of each resource. Alt B requires a minimum of 124-ft for the additional 2-lanes and wider median; Alt C requires approximately 84-ft for the highway width; and Alt F requires approximately 70-ft in width. Each alternative impacts the same aquatic resources, but on different scales. Fish, mussels, and other aquatic species are likely to experience mortality during construction activities and ultimately fill in WOUS. Stream impacts would be temporary in nature as colonization from upstream sources would occur naturally. Most jurisdictional wetlands would remain on the landscape, although smaller in size. Naturally occurring re-colonization would take place throughout the corridor.

Conclusions: The build alternatives would have a substantial impact on aquatic organisms, either temporarily during construction or permanently after construction is complete. The alternatives would all increase the length of culverts throughout the project alignment. As per North Dakota Regional General Conditions, all streams with intermittent and perennial flow and a stable stream bed requires that culverts be counter-sunk with the culvert invert set below the natural streambed according to the table included in the North Dakota Regional Conditions for the 2017 Nationwide Permitting Program. This is to create a more natural streambed within the culvert. Following construction, aquatic organisms should quickly re-colonize the culverted section of stream. The recolonization would be directly related to the length of the culvert, so the longer the culvert the longer the time necessary for recovery. However, this is similar between all build alternatives with Alt B being approximately 124-ft, Alt C being 84-ft and Alt F being 70-ft.

7.2.3. WILDLIFE VALUES

Wildlife associated with aquatic ecosystems includes resident and transient mammals, birds, reptiles, and amphibians. The discharge of dredged or fill material can cause changes in water levels, flow and circulation, salinity, chemical content, substrate characteristics and elevation, increased turbidity or contaminants, potentially resulting in the loss or change of breeding and nesting areas, escape cover, travel corridors, and preferred food sources; and in conditions that may favor the introduction of undesirable plant and animal species, disrupt the normal functions of the ecosystem, and lead to reductions in overall biological productivity.

The proposed project is located in rural setting within western North Dakota. The surrounding land use is primarily ranching and federally owned property such as the Dakota Prairie Grasslands and TRNP. As a result, the area provides a lot of foraging and breeding habitat for a variety of ungulates including Bighorn sheep (*Ovis Canadensis*), Elk (*Cervus elaphus*), Mule deer (*Odocoileus hemionus*), and Pronghorn (*Antilocapra americana*). Additionally, western North Dakota is home to several smaller mammals which include, but are not limited to Big Brown Bat (*Eptesicus fuscus*), Little Brown Bat (*Myotis lucifugus),* Long-eared bat *(Myotis evotis),* Long-legged bat *(Myotis volans),* Western Small-footed Myotis (*Myotis ciliolabrum*), Townsend's Big-eared Bat (*Corynorhinus townsendii*), American Marten (*Martes Americana),* Badger (*Taxidea taxus)*, Bobcat (*Lynx rufus)*, Coyote (*Canis latrans)*, Eastern Spotted Skunk (*Spilogale putorius)*, Fisher (*Pekania pennant)*, Gray Fox (*Urocyon cinereoargenteus*), Long-tailed weasel (*Mustela frenata)*, Mink (*Mustela vison)*, Mountain Lion (*Puma concolor)*, Raccoon (*Procyon lotor)*, Red Fox (*Vulpes vulpes)*, River Otter (*Lontra canadensis)*, and Swift Fox (*Vulpes velox).* The vast availability of natural resources make western North Dakota highly valued habitat for the previously mentioned species.

Alternative A: The distribution, abundance, and diversity of other wildlife under the No-Action Alternative would remain largely as they are under existing conditions.

Impacts Common to All Build Alternatives: Impacts to wildlife values are anticipated to be similar in nature between all build alternatives. Construction activities could disturb or displace wildlife from areas immediately adjacent to the

construction area. These activities could cause mortality to individuals of the smaller, less mobile and burrowing species, whereas, mobile species would likely disperse to surrounding areas. Individuals dispersing away from the activity would likely experience increased risk of predation, reduced foraging opportunities or reproductive success and energetic costs. The three alternatives remain on the existing alignment. Minor temporary and permanent effects to available habitat are expected under each alternative as the project will require additional ROW. A wider roadway makes it more difficult for various species to cross the roadway safely and all three alternatives would require additional measures to be in place in order to ensure the safe passage of animals. All three alternatives address this concern with the implementation of wildlife crossings. These crossings include large underpasses and larger culvert sizes to allow for larger and smaller mammals to cross under the roadway. The Long X Bridge that spans the Little Missouri River would be replaced in a manner that will provide another crossing within the riparian corridor for both terrestrial and water-dependent species.

Conclusions: The overall impact to wildlife populations would be relatively small, proportionate to the relatively small areas of habitat affected. The 62-mile highway currently has an impact on species dispersal and habitat value along the alignment is marginal. Human use of the corridor and the low quality of habitat within and adjacent to the highway right-of-way reduces the negative impacts to wildlife, including migratory birds. In areas temporarily impacted by construction, wildlife species would recolonize the available habitat following completion of the project. Since the project is likely to be phased, it is unlikely that the entire corridor would be affected at the same time, reducing the impacts on wildlife. With the incorporation of wildlife crossings at specific locations to allow for regular migratory patterns to persist, none of the alternatives are expected to have major effects on wildlife values. NDDOT will also include the use of wildlife fencing to assist in the regular use of the proposed crossings and jump-outs in case larger mammals become trapped within the roadway.

7.3. SPECIAL AQUATIC SITES (WETLANDS, MUD FLATS, VEGETATED SHALLOWS, RIFFLE AND POOL COMPLEXES, CORAL REEFS, SANCTUARIES, AND REFUGES)

Special aquatic sites are geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region (40 CFR 230.3(q-1)).

7.3.1 SANCTUARIES AND REFUGES

No areas considered sanctuaries or refuges would be impacted by the project alternatives as no sanctuaries or refuges are located in the Study Area.

7.3.2 WETLANDS

Wetlands consist of areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The discharge of dredged or fill material in wetlands is likely to damage or destroy habitat and adversely affect the biological productivity of wetlands ecosystems by smothering, dewatering, permanently flooding, or altering substrate elevation or the periodicity of water movement, resulting in a variety of secondary effects on wetland biota and the functions and values that wetlands provide, including but not limited to habitat, flood protection, and water quality.

Special aquatic sites, such as wetlands, are present in the project area. These Palustrine wetlands are located adjacent to the existing U.S. Highway 85 roadway. Some of these features consist of natural basins while others have been constructed and utilized by ranchers for cattle.

Alternative A: Under the No-Action Alternative, wetlands are expected to remain largely in their present locations, and to continue to function as they do at present. Climate change is likely to result in wetlands becoming drier and probably shrinking on average, but with increasing year-to-year variation in size and quality.

Impacts Common to All Build Alternatives: Short and long term effects on wetlands and vegetated shallows would be expected as a result of the discharge of fill material. Within wetlands, the biological, chemical, and physical productivity would be permanently altered with a decreased wetland area. These effects would be minimal when considering the whole watershed; however, some productivity will be lost at the impacted sites. Short-term effects would include alteration of flows and water circulation through wetlands. Temporary impacts such as cofferdams, berms, and the use of pumps

and/or diversion of flows would be necessary for construction to be completed. Some sites are dewatered as a general practice to install culverts. Long-term moderate adverse impacts could be expected under all build alternatives. Changes to hydrology could reduce the ability of wetlands to provide existing functions and services. Impacts to wetland hydrology could degrade water quality, constrict flows, increase downstream flooding, increase peak flows, increase water level fluctuations, and reduce water storage capacity.

Vegetated shallows within streams and rivers would experience temporary effects during construction activities when the permittee uses cofferdams or other forms of authorized construction methods to allow work within areas of flowing water. This would limit the productivity of vegetated shallows by smothering inundated vegetation or increasing turbidity which would result in poor growth during construction activities. In the disturbance areas, species utilizing the vegetated shallows would likely vacate the area and seek other vegetated shallows. Minimal long-term effects could be seen as some of the vegetated shallows may not re-establish and function at their full capacity. However, these impacts would remain minimal within the watershed.

Conclusions: The build alternatives would result in similar impacts to special aquatic sites such as wetlands and vegetated shallows. The build alternatives differ in the width of the proposed highway, with Alt B being approximately 124-ft wide, Alt C at approximately 84-ft wide and Alt F at approximately 70-ft wide. Regardless of the alternative, construction impacts would occur to the same wetlands in differing amounts, from a culvert extensions and road widening of 84-ft for Alt B to approximately 30-ft for Alt F.

7.3.3. BIOLOGICAL AVAILABILITY OF POSSIBLE CONTAMINANTS IN DREDGED OR FILL MATERIAL

Inert material such as clay, gravel and riprap would be utilized as fill material to expand the existing roadway and protect reinforced culverts and pipes.

Alternative A: Under the No-Action Alternative, there would be no impact from possible contaminants in dredged or fill material.

Impacts Common to All Build Alternatives: As a general practice, fill material would come from an approved borrow source that is identified by NDDOT and FHWA at the time of construction. While the sites are reviewed for compliance with the Endangered Species Act, Section 106 of the National Historic Preservation Act, Migratory Bird Act and others, contaminant testing is not included in the review. Approved sites can be found on the NDDOT website. All build alternatives are on the same alignment and consist of the same materials.

Conclusions: Source of materials is expected to be the same regardless of alternative selected. Inert materials will be utilized in construction. As a result of all build alternatives utilizing the same materials and being located along the same alignment within an existing corridor, impacts from contaminants within the fill material are anticipated to be minimal.

7.4. HUMAN USE CHARACTERISTICS OF THE AQUATIC ECOSYSTEM

Pursuant to 40 CFR Part 230 subpart F, these characteristics consist of water supply, recreational and commercial fisheries, water related recreation, aesthetics, and parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves.

7.4.1. WATER SUPPLY AND CONSERVATION

Intake systems are not regulated by the Corps on any waters potentially affected by this project. Information contained on the North Dakota State Water Commission website indicates there are, several intake systems located on various waters in the vicinity of the project. To ensure impacts are minimized, a permit condition could be included to ensure intake owners downstream of any work would be notified of potential water quality or quantity changes during construction. Impoundments, dugouts or developed springs used for livestock watering may be affected by either of the alternatives; however, the NDDOT has committed to ensure ranchers are compensated for any impacts.

Alternative A (No Build): Under the No-Action alternative, there would be no impact to water supply and conservation.

Impacts Common to All Build Alternatives: Impacts are the same regardless of the alternative selected.
Conclusions: Impacts to water supply are anticipated to be minimal because this is not a consumptive use project.

7.4.2. RECREATIONAL AND COMMERCIAL FISHERIES

The proposed project is not located on an aquatic resources that is utilized for commercial fishing. Some recreational fishing may occur for catfish, blue gill, and carp within the Little Missouri River around the TRNP (NPS 2017).

Alternative A (No Build): Under the No-Action alternative, there would be no impact to recreational or commercial fisheries.

Impacts Common to All Build Alternatives: All build alternatives are located on the same alignment and include the reconstruction of the Long-X Bridge which crosses the Little Missouri River. The existing bridge would be replaced in a similar manner under all build alternatives. Impacts to recreational fishing within the Little Missouri River would mostly be temporary as the new bridge is constructed and the old bridge removed. Following construction, a minor change in the location of piers within the Little Missouri River would have a minimal long term effect on recreational fishing in the area.

Conclusion: With all three build alternatives utilizing similar construction methods and materials and the lack of commercial fisheries being located in the project, only a minor effect to recreational fishing is expected. Overall, the impacts to recreational and commercial fisheries are anticipated to be minimal.

7. 4.3. WATER RELATED RECREATION

Water related recreation in the project area is only expected to occur within the Little Missouri River such as the use of kayaks or canoes in some areas. The remainder of the resources do not support water related recreation immediately adjacent to the roadway.

Alternative A (No Build): Under the No-Action alternative, there would be no impact on water related recreation.

Impacts Common to All Build Alternatives: All build alternatives would be located on the same corridor, impacts to recreational use of the Little Missouri River are expected to be the same. Temporary impacts during construction activities may prohibit the use of the area for safety reasons and user experience may differ from normal conditions with noise and visual effects from equipment.

Conclusion: Due to the limited utilization of the aquatic resources in the project area for water related recreation, minimal impacts are anticipated as a result of any of the build alternatives being presented. The project would mostly result in temporary impacts during construction activities but general use of the area would resume following construction activities.

7.4.4. AESTHETICS

The U.S. Highway 85 corridor is located in one of the most picturesque areas of North Dakota. The Little Missouri River has been designated as a State Scenic River; but has not attained the same Federal designation. The U.S. 85 corridor traverses through the Little Missouri National Grasslands (LMNG) and Theodore Roosevelt National Park (TRNP) – North Unit and is especially important in tourism in North Dakota. The LMNG covers more than one million acres in North Dakota and borders the TRNP. The rest of the corridor is mainly rural agricultural areas with numerous small town interspersed along the highway. Humans have altered the natural landscape through the construction of buildings, railroads, roadways, bridges, fences utilities and industrial development, especially oil field related infrastructure. While it is anticipated that human development and activities will continue to slowly alter visual resources in western North Dakota, the overall visual quality of the rural setting is anticipated to persist into the future.

Under all alternatives, there would be a continuation of fugitive dust and criteria emissions from traveling vehicles, and light pollution from headlights within the rolling prairie and Badlands landscape units.

Alternative A (No Build): Under the No-Action alternative, there would be no impact to aesthetics. However, there would be a continuation of present fugitive dust and vehicle emissions.

Impacts Common to All Build Alternatives: All build alternatives would result in changes to the surrounding area with a widened roadway at WOUS crossings in similar locations. Alt B would have slightly larger footprint than Alt C and F. Temporary impacts are also expected during the construction of any build alternative. The use of heavy equipment for grading, paving, and crane work for the bridge will be temporarily required to complete the project. The phased approach to the project would result in only a portion of the 62-mile highway to be disturbed at any given time, reducing the overall aesthetics impacts. For the Long X Bridge, approximately 4-miles of highway would be visually impacted including construction activities, and ultimately a larger bridge structure within the viewshed.

Conclusion: Impacts to aesthetics would be similar regardless of which alternative is selected. The difference in median design affects the footprint of the project, but it is difficult, if not impossible, to quantify a difference in impacts on

aesthetics. To some of the traveling public, a depressed, wide median with grass may be more pleasing visually than a narrow median with a concrete barrier.

7.4.5. TRAFFIC AND TRANSPORTATION PATTERNS

The U.S. 85 corridor between I-94 at Belfield and Watford City has experienced a significant traffic volume increase over the past several years. This has been driven by the increased oil and gas exploration associated with the Bakken Formation in northwest North Dakota. The rapid increase in development of the Bakken Region has placed a strain on local towns and communities throughout the region. U.S. 85 convers approximately 105 miles from I-94 to the junction of U.S. 2 near Williston. Approximately 43 miles of highway has been expanded from 2-lanes to 4-lanes. The remaining 62-miles within the proposed project area, is a 2-lane, undivided highway. Included in the purpose and need for the project, is the goal of establishing a connective link by constructing a continuous 4-lane highway from the I-94 Interchange to the Watford City Bypass. Although accident data does not indicate that U.S. 85 is subject to more crashes, it is the perception that the disproportionately high percentage of large truck traffic relative to the average daily traffic (approximately 33%), does increase the potential for serious accidents. The existing 2-lane highway has limited availability of passing lanes, increasing the likelihood that drivers are more likely to engage in risk-taking behaviors to maneuver around slow-moving vehicles.

It is anticipated that with the current growth rate in western North Dakota, the U.S. 85 corridor would begin to experience unacceptable traffic conditions by the year 2040, accentuating the need for highway improvements throughout the corridor.

Alternative A (No Build): Under the No-Action alternative, traffic and transportation patterns would remain the same as they are now.

Impacts Common to All Build Alternatives: All build alternatives would provide for increased capacity with 4-lanes of traffic between I-94 Interchange and Watford City Bypass. Each build alternative would result in acceptable traffic conditions into the future and beyond 2040. The 4-lane highway would provide for safer road conditions by providing the opportunity to pass slow moving vehicles.

Conclusion: All build alternatives would provide for increased capacity and safer road conditions with 4-lanes. Safety will be addressed in Section 7.4.7.

7.4.6. NOISE

The project corridor is located primarily within an area of agricultural land use and the Badlands, with oil and gas wells, commercial buildings and facilities, and residences (KLJ 2017). The primary existing environmental noise source contributing to the ambient noise levels within the project area is traffic on U.S. 85. Other sources of environmental noise include traffic on other local roadways and noise associated with oil field development and support services. Monitoring during 2016 indicates that traffic noise ranges from 49.0 to 75.6 A-weighted decibels (dBA).

Increasing traffic volumes, vehicle speeds, or the amount of heavy truck traffic could lead to an increase in traffic noise within the corridor. Traffic noise can be a combination of noises from engines, exhaust, aerodynamics, and tires. Defective mufflers, truck compression braking, steep grades, terrain and vegetation near the roadway can also contribute to traffic noise heard at the roadside. Table 14 lists common noise levels, many that are associated with highway activities.

Table 15: Common Noise Levels

Sound Source	(dBA)
Military jet, air raid siren	130
Amplified rock music	110
Jet takeoff at 500 meters	100
Freight train at 30 meters	95
Train horn at 30 meters	90
Heavy truck at 15 meters	
Busy city street, loud shout	80
Busy traffic intersection	
Highway traffic at 15 meters, train	70
Predominantly industrial area	60
Light car traffic at 15 meters, city or commercial areas or residential areas close to industry	
Background noise in an office	50
Suburban areas with medium density transportation	
Public library	40
Soft whisper at 5 meters	30
Threshold of hearing	0

Note: A 10 dBA increase in level appears to double the loudness, and a 10 dBA decrease halves the apparent loudness.

Source: Cowan, James P. Handbook of Environmental Acoustics. Van Nostrand Reinhold, New York, 1994. Egan, M. David, Architectural Acoustics. McGraw-Hill Book Company, 1988.

Alternative A (No Build): Under the No-Action alternative ambient noise levels within the project area would continue with slight increases with additional traffic.

Under the future (2040) no-build scenario, traffic noise levels at receptor locations along the project corridor are predicted to be as follows:

- Segment 1: between 45.4 and 65.9 dBA
- Segment 2: between 45.3 and 66.0 dBA
- Segment 3: between 48.7 and 63.6 dBA
- Segment 4: between 46.7 and 64.0 dBA

None of the modeled receptors would have noise levels that approach, meet, or exceed their assigned FHWA Noise Abatement Criteria (NAC), and a 15-dBA increase from existing conditions (i.e., substantial increase) would not occur at any of the modeled receptors. (KLJ 2017).

Impacts Common to All Build Alternatives: All build alternatives would have similar impacts on noise levels within the corridor. Noise levels vary with distance from the source of the noise. Highway traffic 50-ft from a receptor (such as a person listening to the noise) typically produces sound levels of approximately 70 dBA. The same highway noise measures 66 dBA at a distance of 100-ft, assuming soft ground conditions. This decrease is known as “drop-off.” The outdoor drop-off rate for line sources, such as traffic, is a decrease of approximately 4.5 dBA (for soft ground) for every doubling of distance between the noise source and receptor (for hard ground the outdoor drop-off rate is 3 dBA for line sources). Assuming soft ground, for point sources, such as amplified rock music, the outdoor drop-off rate is a decrease of approximately 7.5 dBA for every doubling of distance between the noise source and receptor (for hard ground the outdoor drop-off rate is 6 dBA for point sources).

The following levels were provided for in the Noise Analysis (KLJ 2017):

Under the future (2040) build scenario, traffic noise levels at receptor locations along the project corridor are predicted to be as follows:

- Segment 1: between 45.6 and 65.7 dBA
- Segment 2 with Option FF-1: between 45.4 and 66.6 dBA

- Segment 2 with Option FF-2: between 40.0 and 65.6 dBA
- Segment 2 with Option FF-3: between 38.7 and 65.7 dBA
- Segment 2 with Option FF-4: between 39.5 and 65.7 dBA
- Segment 3 with Option INT-1: between 49.0 and 63.6 dBA
- Segment 3 with Option INT-2: between 49.0 and 63.6 dBA
- Segment 4: between 49.8 and 63.7 dBA

None of the modeled receptors would have noise levels that approach, meet, or exceed their assigned FHWA NAC, and a 15-dBA increase from existing conditions (i.e., substantial increase) would not occur at any of the modeled receptors.

All build alternatives would require heavy construction equipment to operate within the highway corridor. The estimated worst-case scenario noise level for the construction equipment proposed for the construction of the sites (at the source) includes dump trucks (76 dBA) and backhoes (78 dBA) for a combined noise of 80 dBA (FHWA 2006). Table 15 lists common equipment used in highway construction and the noise levels associated with the operation of the equipment. As per the above "drop-off" rate, the further from the noise the less impact it has.

Table 16: Common noise levels associated with highway construction equipment.

Equipment	Sound Level at Operator	
	Average	Range
*Background**	86	
Earth Moving:		
Front End Loader	88	85-91
Back Hoe	86.5	79-89
Bull Dozer	96	89-103
Roller	90	79-93
Scraper	96	84-102
Grader	<85	
Truck	96	89-103
Paver	101	100-102
Material Handling:		
Concrete Mixer	<85	
Concrete Pump	< 85	
Crane	100	97-102
Derrick	<85	
Power Units:		
Generators	<85	
Compressors	<85	
Impact:		
Pile Driver (diesel and pneum.)	98	82-105
Pile Driver (gravity, bored)	82.5	62-91
Pneumatic Breaker	106	94-111
Hydraulic Breaker	95.5	90-100
Pneumatic chipper	109	
Other Equipment:		
Poker Vibrator	94.5	87-98
Compressed Air Blower	104	
Power Saw	88.5	78-95
Electric Drill	102	
Air Track Drill	113	
Noise Standards		**Noise Level**
OSHA (at workers ear)		90 dB (A)
Day Time Community (at property line)		65 dB (A)

Conclusion: All build alternatives would have similar noise impacts during construction. The same equipment would be used regardless of the median width. Following completion of the project, all build alternatives would be very similar to the existing "No Build" alternative and would only see very slight increases in noise levels.

7.4.7. SAFETY

Based on a review of available scientific literature on the subject of median widths, it was apparent that as median widths increase, accidents decrease. Stamatiadis and others (2011) found that for every 10-ft of median width increase there was an 8% decrease in crashes. This study also found that for every 1-ft increase in shoulder width there was a reduction of 6% in the occurrence of accidents. Additional research (Ahmed et.al. 2015) indicated that in 2010 approximately 54% of the 30,862 fatality accidents in the U.S. occurred on 2-lane roadways.

Based on data obtained from the NDDOT, between June 2010 and May 2015, there were a total of 342 reported crashes that occurred along the project corridor. Of these crashes, 90 resulted in injuries and 10 resulted in fatalities. Run-off-the-road/fixed-object type crashes comprised 49 percent of the total crashes, rear-end collisions comprised 21 percent, and head-on/opposite direction sideswipe crashes comprised 10 percent. Six of the 10 fatal crashes resulted from head-on collisions. One area with a pattern of vehicle crashes has been identified, which is located at reference point (RP) 121, just south of the Badlands. In this location, vehicles failing to navigate the curve has resulted in several crashes.

Although these crash numbers seem high, the actual crash rate along the project corridor during this time frame was 0.70 per million vehicle miles traveled (MVMT) as compared to a statewide average of 1.55. What these numbers fail to

account for are unreported crashes, near misses, and public perception. The two-lane highway with limited passing opportunities and above average truck traffic promotes a greater tendency for drivers to engage in high-risk passing behaviors. These high-risk behaviors can make drivers uncomfortable and create a perception of unsafe driving conditions, highlighted by numerous public comments indicating avoidance of the project corridor when possible.

Another safety issue highlighted by the North Dakota Highway Patrol (NDHP) is the variable shoulder width along the project corridor. Narrow shoulder widths along some segments of the existing roadway present safety issues when vehicles breakdown or during law enforcement traffic stops. Narrow shoulders limit the ability to provide separation between stopped vehicles and mainline traffic creating potential conflict points. NDHP has indicated that narrow should widths hinder their ability to enforce traffic laws along the corridor.

In addition to safety concerns created by the presence of other drivers, the North Dakota Game and Fish Department (NDGF) and general public have identified safety concerns associated with wildlife-vehicle interactions. For example, in 2012–2013, the NDGF relocated the Mormon Butte herd of bighorn sheep due to a high number of bighorn sheep vehicle strikes.

Alternative A (No Build): Under the No-Action alternative, there would be no construction-related impacts on communities, community services, or businesses, as no roadway construction would occur. The travelling public would continue to experience US Highway 85 in its current, two-lane configuration. Travelers would continue to experience high traffic volumes that are projected to increase, as well as Level of Service (LOS) that is projected to be deficient by 2040. Reliability and capacity of the congressionally designated high-priority corridor would not be improved, and the two-lane corridor would continue to lack opportunities for passing and turn lanes for passenger vehicles, school buses, emergency vehicles, and heavy trucks and equipment.

There would continue to be no pedestrian or bicyclist facilities along the project corridor. Access points would remain unconsolidated and offset. Over-height vehicles would continue to experience a height restriction at Long X Bridge, resulting in continued detours. Over-height vehicle collisions with the Long X Bridge would continue to present a safety hazard for the travelling public and necessitate detours. The potential head-on/opposite-direction sideswipe crashes, run-off the- road/fixed-object crashes, and wildlife-vehicle collisions would remain unchanged. Agency and public concerns with regard to safety would not be addressed.

Alternative B (Divided, depressed median 52-ft wide): The incorporation of a depressed, center median would provide an additional level of protection above Alt C and F. A wider median is directly associated with a reduction in head-on fatality accidents. In addition, emergency response times and law enforcement operations would be improved with a wider highway and ability to remove disabled vehicles from the roadway. Safety improvements also include the addition of turn lanes and wider shoulders.

Alternative C (Divided flush median 20-ft wide): In accordance with the AASHTO Green Book (Section 7.2.11), 12- to 30-foot-wide medians provide a protected storage area for left-turning vehicles at intersections. Rural medians less than 25 feet wide should be avoided, because drivers may be tempted to stop in the median with part of their vehicles unprotected to through traffic. Using a school bus, the median should be 50 feet wide and using trucks, the median should be at least 80 feet wide.

Alternative F (Undivided highway – median width of 4-6-ft): Under Alternative F, the median width would be minimal with no barriers. This would still allow for head-on collisions and vehicle cross-over into on-coming traffic. In accordance with the AASHTO Green Book (Section 7.2.10), undivided, multi-lane arterials have significantly more collisions than multi-lane facilities with medians. Therefore, multi-lane, undivided facilities are discouraged, except where a median or turn lane is not practical. If traffic volumes justify the construction of multi-lane arterials in rural areas where speeds are high, it is generally advisable to separate opposing traffic by a median. Preferably the median should be provided in conjunction with widening of an existing two-lane arterial into a multi-lane facility.

Conclusion: Based on the available data, Alternative B is the safest alternative. The reduction in the potential for head-on collisions and fatality accidents is significant. As per the data above, for every 10-ft of median width increase there was an 8% decrease in crashes. The difference between Alt F and Alt C would be 8-12% reduction in crashes, and between Alt C and Alt B there is approximately a 24% reduction in crashes.

7.4.8. RECREATION

The TRNP – North Unit and the Little Missouri National Grasslands are both located within the proposed highway corridor. From 2012 to 2017, the TRNP– North Unit averaged nearly 99,000 visitors annually, the majority of whom accessed the park via the US Highway 85 project corridor. The TRNP – North Unit offers a visitor's center, trailheads, overlooks and pullouts, camping, picnicking, NPS employee housing, and park maintenance facilities The Little Missouri National Grasslands (LMNG) covers an area of more than one million acres in western North Dakota. The LMNG is managed by the US Forest Service (USFS) and borders the TRNP, which is managed by the National Park Service (NPS). The LMNG is the largest National Grassland in the United States, highlighted by mixed-grass prairies and Badlands topography. Each USFS managed parcel of land within the LMNG has been assigned a Management Area (MA) designation, which defines the goals and allowable uses for the parcels. In addition, some areas are designated by the USFS as Inventoried Roadless Areas. Inventoried Roadless Areas, the Non-motorized Backcountry Recreation MA, and Suitable for Wilderness MA include restrictions for new roadway construction. As is the case for the TRNP – North Unit, US Highway 85 borders numerous parcels and functions as one of the primary arterial roadways for accessing the LMNG.

Alternative A (No Build): Under the No-Action alternative, there would be no direct impact to recreational activities within the U.S. 85 corridor. Impacts would result, however, in the long-term degradation of services as traffic increases without adding any additional capacity to the highway. Access points would remain the same and may cause additional traffic congestion.

Impacts Common to All Build Alternatives: All build alternatives would increase noise impacts during construction that would detract from the wilderness experience. In particular, pile driving activities associated with construction of the Long X Bridge and demolition of the existing bridge would create temporary noise impacts that would vary in degree based on location and atmospheric conditions. In addition, NDDOT would need to expand the existing right-of-way to accommodate the two new lanes of traffic. This would require easements from the NPS and USFS that would encroach onto public lands. This is not anticipated to impact current recreational activities within the public lands boundaries and would be limited to areas adjacent to the existing roadway.

Conclusion: The alternatives presented would have some impact on recreational activities. Alternative A, the No Build Alternative, would impact the accessibility of areas within the TRNP – North Unit and the LMNG. Long-term increases in traffic volumes would have a negative effect on the overall natural experience of the public lands. All build alternatives would adversely affect recreation during construction of the new highway, but would be short-term. Alternative F would not provide for safe access and the occurrence of slow-moving vehicles may lead to risk-taking activities by drivers. Alternatives B and C would be very similar in impacts, but as presented in Section 7.4.7; wider medians reduce crashes by approximately 24%.

7.4.9. NAVIGATION

None of the build alternative or the No-Action alternative would impact navigation.

7.4.10. ENERGY NEEDS

Direct energy refers to the fuel consumed by vehicles using a given alternative transportation facility. Direct energy is calculated based on the number of vehicles using the facility and the physical characteristics (e.g., distance, grades, and curves) and traffic flow characteristics (e.g., congested, free flowing) of each alternative. Indirect energy consumption is associated with the construction, operation, and maintenance of the alternative and the manufacture and maintenance of vehicles using the facility.

Alternative A (No Build): Under Alternative A, no direct impacts on oil and gas or electricity infrastructure would be expected, and there would be no short-term consumption of energy due to construction activities, as roadway construction would not occur. However, Alternative A would not address the demand for an improved highway system capable of addressing the social and economic needs of the region, which are tied to operation and maintenance of oil and gas development.

Impacts Common to All Build Alternatives: The project would address the demand for an improved highway system capable of addressing the social and economic needs of the region, which are tied to operation and maintenance of oil and gas development. Traffic along the corridor is expected to grow approximately 2.5 percent each year. According to the capacity analysis conducted as part of the Traffic Operations Report (appended by reference), expanding the existing two-lane roadway to a four-lane roadway would improve the ability for vehicles to pass and improve the reliability of US

Highway 85. Under Alternatives B, C and F, the LOS along the project corridor is projected to be between 'A' and 'B' by 2040. A reduction in sudden acceleration associated with passing, as well as reduced congestion, would increase fuel efficiency along the project corridor (FHWA 2015b). Impacts on oil and gas and electricity infrastructure would occur where relocations would be required to accommodate the new roadway footprint. Along the entire project corridor, except for the Fairfield options, Alternative C would impact more than twice the length of electricity line compared to Alternative B, and slightly more length of oil and gas infrastructure.

Construction activities would result in short-term consumption of energy due to on-road haul trucks transporting material, construction commuter vehicles, and operation of construction equipment. Additional energy from electricity utilities may be utilized for construction activities.

Conclusion: All three build alternatives have similar impacts on energy and there would be no appreciable difference.

7.4.11. MINERAL NEEDS

The most recent data available for North Dakota was found in the USGS 2012-2013 Minerals Yearbook. In 2013, non-fuel mineral production in North Dakota was 263 million, which accounted for approximately 0.4% of the total U.S. production. In 2013, there were 29 surface mining operations that were mining sand and gravel, clay, scoria and rock. In 2013 and 2012, North Dakota produced common clay, construction and industrial sand and gravel, crushed stone, lime, and natural gemstones. The largest increase in quantity and value was for construction sand and gravel, which has increased steadily since 2011.

Alternative A (No Build): Under the No-Action alternative, because it would result in no construction, would have no impact on mineral needs.

Impacts Common to All Build Alternatives: All build alternatives would use fill material that would consist of imported clean fill material from a commercial source and native soil from within the project area. It is expected that there is enough material (inclusive of asphalt for roadway surfacing) available regionally, such that the proposed project is expected to have minor impacts on mineral needs.

Conclusion: All three build alternatives have similar impacts on mineral needs.

7.4. 12. ECONOMICS

US Highway 85 is part of the National Highway System (NHS), which is a network of roadways important to the nation's economy, defense, and mobility. In addition, US Highway 85 is classified as an Interregional System Highway, has been designated as a High Priority Corridor by the United States Congress, and is part of the Ports-to- Plains Alliance's TRE section. Goals and policies associated with these designations focus on mobility, reliability, and ability to support economic activity. Of the 105 miles of US Highway 85 between I-94 and the junction of US Highway 2 (both four-lane, east-west directional highways), the northernmost 43 miles between Williston and Watford City have been expanded from two lanes to four lanes; the project corridor constitutes the remaining 62 miles.

Currently, industries utilizing the Long X Bridge experience a vehicle clearance of 16 feet, with an allowable vehicle height of 15 feet, 8 inches. Within North Dakota, loads greater than 14 feet, 6 inches high are required to obtain a permit from the NDHP. From June 2013 through December 2015, approximately 138,800 over-height permits were issued along major roadways in western North Dakota. The Long X Bridge clearance was inadequate for 28 percent (39,000) of permit applications. Over-height vehicles traveling along US Highway 85 are currently forced to detour around the Long X Bridge via ND-22. Since 2011, there have been seven major incidents of over-height vehicles hitting the Long X Bridge resulting in one instance of full closure for five days for analysis and repair, three instances of overnight closures of approximately two weeks each for repairs, and one planned closure to repair the most recent damage. These closures force all traffic utilizing the Long X Bridge to detour.

The economy of western North Dakota is driven by agriculture, the oil and gas industry, and tourism. Major economic centers in western North Dakota include Williston, Dickinson, Watford City, and, to a lesser extent, Belfield, with the latter two located immediately north and south of the project corridor, respectively. Along the project corridor, the communities of Fairfield and Grassy Butte generate additional economic activity, along with oil and gas development, farming, and ranching in rural areas. There are existing highway-related businesses (e.g., gas stations, motels, restaurants) located in Belfield. Two gas stations (i.e., Cenex and Conoco), Trapper's Inn Motel & Campground, and Trapper's Kettle restaurant are located immediately south of the I-94 interchange, with access points along US Highway 85. Various oilfield services

are located just north of the I-94 interchange. Highway-related businesses in Fairfield include a recreational vehicle park, restaurant, and bar. The Sweet Crude Travel Center is located at the intersection of US Highway 85 and ND-200. Grassy Butte offers a gas station, two bars, and oilfield services. In Watford City highway-related businesses include gas stations; restaurants; hotels; and automotive, farm, and oilfield services.

The main agricultural commodities in Stark, Billings, and McKenzie counties include cattle, wheat and other grains, oilseeds, dry beans, and dry peas. There are more than 1,600 farms spanning over 2.6 million acres in Stark, Billings, and McKenzie counties. The total market value of agricultural commodities sold from these farms is over $300 million dollars per year (USDA 2012a).

Due to the advancement in deep Horizontal Directional Drilling (HDD) techniques in the Bakken and Three Forks formations, North Dakota entered its third oil boom in the early 2000s, which peaked in 2012 (NDIC 2015b, SHSND 2016). McKenzie, Billings, and Stark counties are among 17 counties in western North Dakota that are actively producing oil and gas (Job Service North Dakota 2017). There are 322 producing or soon to be producing oil and gas wells (i.e., active, confidential, drilling, or permitted status) in Stark County, 590 in Billings County and 4,743 in McKenzie County (NDI C 2018). Of these, 63 wells are within 0.5 miles of the project corridor. US Highway 85 is one of the arterial roadways for oil and gas activity within the region for transporting goods, equipment, and personnel.

From 2009 to 2016, annual crude oil production in North Dakota increased approximately 377 percent (from 79.7 to 380.3 million barrels per year). However, oil and gas production growth has slowed in recent years, as a worldwide surplus of crude oil caused the price of oil to fall. From 2013 to 2014, there was an approximate 21 percent annual increase in oil production. The increase in annual production slowed to approximately 9 percent from 2014 to 2015, and production reversed to an annual decrease of approximately 12 percent from 2015 to 2016. Oil production leveled off in 2017, whereby there was a 1 percent increase in production from January to October compared to the same period in 2016 (NDIC 2016c, NDIC 2017).

This sharp decline in oil prices has impacted western North Dakota as oil companies have been forced to lay off workers and significantly cut back on development of new wells. In 2014, an average of 190 active drilling rigs were operating within the state. In 2015 and 2016, the number of active drilling rigs dropped to 91 and 35, respectively (NDIC 2017). Although recent trends in the oil and gas industry have significantly reduced new well development, United States crude oil production is forecasted to average 10.7 million barrels per day in 2018, which is approximately 10 percent higher than crude oil production in 2016 (8.9 million barrels per day) (EIA 2018). In addition, approximately 11,000 wells have been drilled in the region since 2009 (NDIC 2016a). These wells require a maintenance and operation workforce that will remain in the area as long as the wells remain active. According to the Department of Mineral Resources, the price point at which production from existing wells would be shut-in is 15 dollars per barrel (NDIC 2015a). Based on the level of development and population growth that has already occurred within the region, the return to pre-2009 activity levels is unlikely in the near future.

In 2013, a total of 24 million people visited North Dakota. These visitors generate 5 percent of state and local taxes each year (NDTD 2015). Tourism has been active in western North Dakota since the days of Theodore Roosevelt (i.e., the 1880s). Recreationists in western North Dakota have access to vast swaths of public lands, including TRNP and LMNG. Over 700,000 people visit the TRNP each year. Of these visitors, an average of nearly 99,000 (2012–2017) visit the TRNP – North Unit each year, the majority of whom accessed the park via the US Highway 85 project corridor. Outdoor recreational opportunities in western North Dakota include backcountry and modern camping, bicycling, canoeing/kayaking, and fishing, cross-country skiing, snowshoeing, hiking, horseback riding, wildlife viewing, photography, fishing, and hunting (USFS Undated (d), NPS 2015c, NPS 2016, NPS 2017a, NPS 2015b).

The five-year average (2011 to 2015) median household income for Stark, Billings, and McKenzie counties was $72,099, $70,469, and $72,794, respectively. These values are above the State of North Dakota's average of $57,181 (US Census Bureau 2015b). There are significantly more jobs in Stark County than in McKenzie County, and significantly more jobs in McKenzie County than Billings County. The largest employers in these counties are Mining, Quarrying, and Oil and Gas Extraction; Construction; Government and Government Enterprises; Transportation and Warehousing; and Retail Trade (BEA 2016).

Alternative A (No Build): Under Alternative A, the project corridor would remain a two-lane highway. As such, the anticipated benefits of the TRE (i.e., stimulation of transportation opportunities and added opportunities for economic growth) would not occur (TRE Undated), and the reliability and capacity of the congressionally designated high-priority corridor would not be improved.

The industries dependent on the project corridor would continue to experience US Highway 85 in its current, two-lane configuration. Reliability and capacity would not be improved, and the two-lane corridor would continue to lack opportunities for passing and turn lanes for all highway users. Existing height restrictions associated with the Long X Bridge would not be addressed. Over height vehicles would continue to utilize suboptimal routes to reach their destination, resulting in lost time and money. Additionally, the potential for over height vehicles striking the Long X Bridge would persist. Businesses would not experience consolidation or modification of access points. Cattle passes would not be impacted, and there would be no change to existing highway closure options for moving livestock across US Highway 85. There would be no potential for removal of mainline traffic from traveling through Fairfield, which could result in both positive and negative economic impacts on the community.

Under Alternative A, there would be no expenditure of local, state, or federal funds for project construction. As such, the regional economy would not experience a temporary increase in construction employment opportunities and subsequent increase in payroll taxes, sales receipts, and indirect purchases of goods and services that would occur if the project were constructed.

Impacts Common to All Build Alternatives: All build alternatives would expand the existing highway to a four-lane highway. The project would bring the TRE closer to completion and would improve the reliability and capacity of the congressionally designated high-priority corridor. The TRE is anticipated to stimulate transportation opportunity's extending more than 100 miles from the corridor and add opportunities for economic growth (TRE Undated).

The project would improve the reliability and capacity of US Highway 85 for industries dependent upon the project corridor by providing a four-lane highway, including opportunities for passing and turn lanes. Options LX-1, LX-2, and LX-3 may indirectly alter travel patterns and improve reliability by relieving and/or removing height restriction constraints (i.e., detours and crash potential) associated with the Long X Bridge. These options have not been addressed in this document and more information on these options may be found in the DEIS. This would reduce the likelihood of detours and decrease or remove the potential for collisions with the bridge. These improvements have the potential to decrease the cost of doing business as a result of less travel time and potential damage to equipment. Access would be maintained for all businesses, although consolidation of field drive access points would likely occur. Under Alternative B, some field drive accesses may be converted to right-in/right-out (i.e., no median crossover would be provided). Final determination of access modifications would occur during final design and ROW negotiations. Some cropland and grazing land would be converted into a transportation corridor. These modifications are not anticipated to result in economic impacts on businesses.

During final design and ROW negotiations, negotiations would also occur regarding the extension of existing cattle passes or incorporation of new cattle passes. Currently, landowners owning parcels on both sides of the highway have the ability to coordinate with the NDHP to temporarily close the highway to traffic in order to move livestock across the highway. With the expanded roadway under Alternatives B and C, the NDHP may be less likely to close the highway to move livestock, which would force ranchers to utilize other measures for moving livestock. If additional cattle passes are requested by adjacent landowners, these requests would be considered utilizing the NDDOT Cattle Pass Consideration process (State Form Number 10155), which includes a cost/benefit analysis to determine if installation of a cattle pass is justified. If it is not justified, the adjacent landowner would typically be required to contribute funds for construction. In addition, for any fencing impacted during construction activities, temporary and/or replacement permanent fencing would be provided, as necessary. The potential modifications of operations and contribution of funds for cattle passes may result in minor economic impacts on ranching businesses. Three of the Fairfield options, Options FF-2, FF-3, and FF-4, would remove mainline traffic from traveling through Fairfield, while Option FF-1 would maintain mainline traffic on the exiting alignment through town. Because Option FF-1 would be similar to existing conditions, economic impacts on local businesses are anticipated to be minor. These options have not been addressed in this document and more information on these options may be found in the DEIS.

Under Options FF-2, FF-3, and FF-4, drivers travelling along US Highway 85 desiring to stop in Fairfield would be required to turn off of mainline US Highway 85 to access the community. This could result in fewer overall stops being made in Fairfield, as the default condition would be to continue along US Highway 85 around Fairfield. Fewer stops in Fairfield may result in fewer payroll taxes, sales receipts, and the indirect purchase of goods and services at local businesses. To the contrary, a reduction in traffic volumes in the community would improve mobility within town, improve safety, and would result in a quieter overall atmosphere. These changes may have an indirect beneficial impact on the overall business environment, whereby the existing highway would function more like a 'main street' in Fairfield. Construction of the project would result in an expenditure of local, state, and/or federal funds for project construction. Apart from the options, Alternative B would cost approximately $419 million, while Alternative C would cost approximately $389 million. The Fairfield options would add approximately $12 to $17 million, the ND-200 intersection options would add $3 to $4 million, and the Long-X Bridge options would add $35 to $40 million. In addition, the trail between McKenzie County Road 30 and McKenzie County Road 34 would add approximately $1 million, and the wildlife crossing system would add $7 million. Overall, the Preferred Alternative (i.e., Alternative B with Options FF-1, INT-2, and LX-3, including the trail and wildlife crossing system) would cost approximately $479 million. The regional economy would experience a temporary increase in construction employment opportunities and subsequent increase in payroll taxes, sales receipts, and indirect purchases of goods and services as a result of construction activities.

During construction, travel patterns would remain similar to existing conditions, as two lanes of traffic would be maintained and reasonable construction access to properties and roadways would be maintained. Speed limits within construction zones would be reduced, which temporarily increase travel times, and accessing businesses would may require minor detours. Increased travel times may result in a temporary increase in cost of doing business during construction activities.

Conclusion: All three build alternatives would have similar impacts on the economy. However, Alternatives B and C are safer alternatives and may decrease the costs associated with accidents on highways.

7.4.13. FOOD AND FIBER PRODUCTION

Over the years, the number of farms and ranches in Stark, Billings, and McKenzie counties has decreased, while the size of the farms and ranches has increased. According to the Census, Stark County contained 837 farms (approximately 829,547 acres), Billings County contained 197 farms (approximately 722,275 acres), and McKenzie County contained 574 farms (approximately 1,064,191 acres) in 2012. Crops produced at these farms varied from small grains to native grass; much of which was used for cattle grazing. In addition to grazing on private land, a large amount of grazing occurs on federal lands (USDA 2012a).

Alternative A (No Build): Alternative A (No Build): Under the No-Action alternative, there would be no impact to food and fiber production.

Impacts Common to All Build Alternatives: All build alternatives would reduce the amount of farmland within the U.S. 85 corridor. However, the majority of farms throughout the area are cattle operations and the crops that are grown are in support of the cattle industry. Overall, the amount of farmland conversion is minimal and would not greatly impact food and fiber production in the state.

Conclusion: All three build alternatives would have similar impacts on food and fiber production.

7.4.14. PRIME AND UNIQUE FARMLAND

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion, as determined by the Secretary of Agriculture. This may include lands currently used to produce livestock and/or timber. Unique farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops, as determined by the Secretary of Agriculture. Examples of such crops include citrus, tree nuts, olives, cranberries, fruits, and vegetables (USDA 2012b).

The main commodities in Stark, Billings, and McKenzie counties have been agricultural until recent years with the expansion of oil and gas development in these areas. Even with the oil and gas boom, these counties still have a strong agricultural base. The top agricultural commodities in these counties include wheat and other grains, oilseeds, dry beans, and dry peas. Billings and McKenzie counties also have cattle and calves listed in their top three agricultural commodities (USDA 2012a).

Alternative A (No Build): Under the No-Action alternative, there would be no impact to prime farmlands.

Impacts Common to All Build Alternatives: All build alternatives would require the acquisition of private property for the expansion of the existing highway. Table 16 lists the acreage impacts for each build alternative.

Table 17: Summary of Prime Farmland and Farmland of Statewide Importance.

	Prime Farmland (acres)	Farmland of Statewide Importance (acres)	Not Designated as Farmland (acres)
Alternative B (without options)	0.80	189.7	665.6
Alternative C (without options)	0.70	131.6	457.4
Alternative F* (without options)	0.60	110.0	381.2

*Alternative F impacts are based on a percentage of the difference in width between a 4-6-ft median and a 20-ft median

Conclusion: All three build alternatives have similar impacts to prime farmland. These impacts are considered negligible in a 62-mile corridor.

7.4.15. CONSIDERATION OF PROPERTY OWNERSHIP

Table 16 lists the private and public lands that would be required for the expansion of the existing highway. The majority of the corridor is in private ownership.

Table 18: Permanent ROW/Easement on Private and Federal Lands

	Permanent ROW Required – Private (acres)	Permanent Easement Required – Federal (acres)		Total (acres)
		USFS	NPS	
ALTERNATIVE B				
Route without options	761.1	73.6	9.38*	**834.7**
Options with Alternative B				
INT-1	2.1	—	—	**2.1**
INT-2	2.6	—	—	**2.6**
FF-1	20.6	—	—	**20.6**
FF-2	97.1	—	—	**97.1**
FF-3	105.2	—	—	**105.2**
FF-4	111.9	—	—	**111.9**
LX-1	5.4	1.2	—	**6.6**
LX-2	9.4	1.7	—	**11.1**
LX-3	9.4	1.7	—	**11.1**
ALTERNATIVE C				
Route without options	520.8	57.4	9.38*	**578.2**
Options with Alternative C				
INT-1	1.0	—	—	**1.0**
INT-2	2.6	—	—	**2.6**
FF-1	22.5	—	—	**22.5**
FF-2	79.1	—	—	**79.1**
FF-3	86.9	—	—	**86.9**
FF-4	96.0	—	—	**96.0**
LX-1	5.4	1.2	—	**6.6**
LX-2	9.4	1.7	—	**11.1**
LX-3	9.4	1.7	—	**11.1**

*Note: *Permanent easement acquisition from the NPS would consist of a Highway Easement Deed that would include the same area as the existing Deed (i.e., 9.21 acres for the highway and 0.17 acres for a drainage easement), but for a four-lane rather than a two-lane highway. The reissued Deed would include an additional 0.2 acres impacted by a recent, landslide repair project (unrelated to the proposed action identified in this EIS) that was covered under a Special Use Permit (MWR-THRO-6000-2011-012).*

Alternative A (No Build): Under the No-Action alternative there would be no acquisition of property.

Impacts Common to All Build Alternatives: Direct land use conversion associated with Alternatives B, C and F would primarily affect agricultural pasture and cropland. Non-agricultural grasslands, forested areas, and developed lands would also be impacted to a lesser degree. Alternative B would impact more acreage then Alternative C and F, while Options FF-2, FF-3, and FF-4 would impact more acreage than Option FF-1. The ND-200/ US Highway 85 intersection options and Long X Bridge options would result in minor amounts of land use conversion, with only negligible variations between the options. ROW acquisition for Alternatives B, C and F would be required adjacent to the existing roadway corridor. The ND-200/US Highway 85 intersection, Fairfield, and Long X Bridge options would also require additional ROW.

Conclusion: All three build alternatives would require the acquisition of additional right-of-way to construct the additional 2-lanes of roadway.

7.4.16. LAND USE

Land use along the project corridor is largely dominated by agricultural cropland and rolling grasslands, except for the 7-mile stretch of corridor that traverses through the Badlands. The Badlands are characterized by highly eroded buttes and hillsides composed of soft silts and clays with sparse vegetation. Topographic relief in this area changes quickly, and soils within this region are historically unstable due to their composition of soft silts and clays, making the area susceptible to landslide activity. Landownership adjacent to the project corridor is a mixture of public and private. Public lands include the Theodore Roosevelt National Park (TRNP) – North Unit, under the management of the National Park Service (NPS),

as well as numerous parcels of the Little Missouri National Grasslands (LMNG), under the management of the US Forest Service (USFS). These lands are open to the public and provide recreational opportunities.

Privately owned property along the project corridor is managed under Stark, Billings, and McKenzie counties' zoning, except for property located within Belfield, which operates under its own zoning ordinances. Two unincorporated communities, Fairfield and Grassy Butte, are located along the project corridor with the majority of the project corridor being described as rural. Residential houses, farmsteads, and oil and gas wells are scattered throughout the project corridor.

Alternative A (No Build): Under Alternative A, it is assumed that current land use trends and conditions would continue to persist. Although Alternative A would not result in direct land use impacts, it may affect future development along the US Highway 85 corridor. Alternative A would not comply with county or city planning documents that identify improvement of transportation systems as one of their goals and objectives.

Impacts Common to All Build Alternatives: All build alternatives would require ROW and easement acquisition and land use conversion for areas adjacent to the existing roadway corridor with varying acreage. The ND-200/US Highway 85 intersection, Fairfield, and Long X Bridge options would also require varying additional ROW and easements. Alternative B would require a greater amount of conversion than Alternative C, due to the wider roadway footprint. Alternative B would only require ROW and easement acquisition along one side of the existing roadway at most locations (except for the Badlands segment), while Alternative C and F would require ROW and easement acquisition from both sides. The roadway design, and ROW and easement requirements for the Badlands segment of the project corridor and the northernmost 2 miles of the project corridor, prior to tying into the Watford City Bypass, would be the same for all alternatives. Acquisition of a permanent easement from the USFS would be required for both alternatives. In addition, a new Highway Easement Deed from the NPS would be required for the project that would include language for the construction, operation, and maintenance of the expanded roadway. The project would not require additional area under the Deed; however, an additional 0.2 acres would be added to account for a recent, unrelated landslide repair project covered under a Special-Use Permit. It was understood by the NDDOT, FHWA, and NPS during the permitting process for the landslide repair project that this additional area would be added to the forthcoming US Highway 85 Highway Easement Deed.

Temporary construction easements would be required along the majority of the project corridor. In addition to the temporary easements identified in this EIS, the contractor may require the temporary use of other areas during construction. These areas would be used for staging and storage areas, and access routes. Any areas identified by the contractor (i.e., not included in this EIS) would be approved through the NDDOT Material Source Approval Process. This process is followed to obtain environmental approval on these sites to comply with all federal and state laws and regulations. These sites would not be permitted on any federal or public lands. Land use patterns would not be substantially impacted by temporary construction use since the affected areas would be restored following construction. Indirect land use impacts may also occur. During and after construction, access to parcels (e.g., residential, oil and gas, agricultural) would be maintained; however, some parcels may become too small or inconvenient to utilize for their current use (e.g., agriculture), resulting in land use changes. Areas where this might occur are rare, since the project would follow an existing roadway as closely as possible. The most likely scenario where existing land use abandonment may occur would be associated with Options FF-2, FF-3, and FF-4. None of the alternatives or options are anticipated to cause growth-inducing effects or result in regional land use pattern changes.

Conclusion: All three build alternatives have similar impacts to land use.

7.4.17. HISTORIC PROPERTIES

A Class III Cultural Resource Inventory and architectural survey were completed for the project. A total of 95 sites were documented in the area of potential effect (APE). Through the Section 106 process, resources were either identified as *unevaluated*, *Eligible*, or *Not Eligible* for inclusion on the NRHP. *Unevaluated* sites that had potential to be impacted by construction of the project were evaluated in 2016 and 2017. None of these sites were determined to be *Eligible* for inclusion on the NRHP, and they did not warrant preservation in-place. Therefore, none are considered a Section 4(f) property. Sites that are *Eligible* for listing on the NRHP are described in Section 6.5.8 of the DEIS.

Alternative A (No Build): Under Alternative A, no direct or indirect impacts on historic or archaeological resources would be expected. The NDDOT would continue to maintain the Long X Bridge under the No Action alternative, such that the historic integrity of the structure would remain. Mitigation for *Eligible* sites would not occur under Alternative A.

Impacts Common to All Build Alternatives: Following completion of evaluative testing a total of 16 sites remained *unevaluated* within the survey corridor. Initial review of the construction limits for all build alternatives and options indicated these 16 sites would not be affected. Of the nine *Eligible* sites, four were identified as being potentially affected by the project. These four *Eligible* sites include the Gregory Homestead, Dolyniuk Homestead, TRNP – North Unit Entry Sign, and Long X Bridge. To avoid impacting the Gregory Homestead, the alignment of the roadway was shifted to the east for both Alternatives B and C. This alignment shift allows for full avoidance of the site boundary by the project; therefore, no impacts on the Gregory Homestead site would be expected. Alternative F was not evaluated for impacts to cultural resources because it was eliminated for further consideration during the DEIS process. Alternative F has a smaller footprint than Alternatives B and C and would not affect any historic properties.

Due to the nature and location of the Dolyniuk Homestead, design of the project was not able to avoid impacting the site under Alternative B, C or F. To mitigate the permanent impact, the NDDOT, in coordination with the SHPO, has developed a mitigation approach. This approach includes documentation of the Dolyniuk Homestead site as well as the Gregory Homestead (32BI1149). The Dolyniuk Homestead and Gregory Homestead are located within the project segment of lowest priority from a construction sequencing standpoint; however, due to the continually deteriorating nature of the sites, mitigation will be completed in 2018 in order to document the greatest amount of information possible. With this mitigation, the SHPO has concurred with a *No Adverse Effect* determination.

The TRNP – North Unit Entry Sign cannot be avoided by Alternative B, C or F. To minimize impacts, the sign would be removed prior to project construction. Upon project completion, the sign would be replaced, intact, in close proximity to its original location. A Special Provision to the Construction Specifications would be drafted for the Entry Sign during final design. The Special Provision would give concise and clear direction to the contractor for handling the Entry Sign. The North Dakota Cultural Resource Survey documentation for the TRNP – North Unit was also updated during the cultural survey. The site form was updated because it was lacking information for historic standing structures, and adequate descriptions and photographs. With the completed work and proposed resetting of the Entry Sign, the NDSHPO has concurred with a *No Adverse Effect* determination.

Conclusion: All build alternatives would have similar impacts to historic properties as they all include the expansion of the existing highway. The impacts of Alt B would be associated with a 32-ft median, 8-ft shoulders and 2-12-ft travel lanes, Alt C would consist of a 20-ft median, 8-ft shoulders and 2-12-ft travel lanes, and Alt F would consist of a 4-6-ft median with 8-ft shoulders and 2-12-ft travel lanes.

7.4.18. PARKS, NATIONAL AND HISTORICAL MONUMENTS, NATIONAL SEASHORES, WILDERNESS AREAS, RESEARCH SITES, AND SIMILAR AREAS

The following description from the 2018 NDDOT DEIS, describes the National Park and Dakota Prairie National Grasslands which are present within the project corridor.

"The Theodore Roosevelt National Park (TRNP) – North Unit is under the management of the National Park Service (NPS). Theodore Roosevelt National Memorial Park was established in 1947, which was re-designated by Congress in 1978 as Theodore Roosevelt National Park (NPS 2014). The purpose of the TRNP is to memorialize Theodore Roosevelt and his conservation legacy. The significance of the TRNP lies with the Little Missouri River Badlands, which consist of a unique, colorful, and rugged landscape formed by 65 million years of erosion that has exposed geological strata. The Badlands include varied habitats, abundant wildlife, fossils, petrified wood, and cultural resources.

Theodore Roosevelt first visited the Badlands in 1883, where he would later establish the Elkhorn Ranch. The TRNP currently protects more than 70,000 acres of land located in Billings and McKenzie counties, including approximately 29,920 acres of designated wilderness area, known as the Theodore Roosevelt Wilderness (NPS 2014). The park is made up of three units: Elkhorn Ranch Unit (218 acres), TRNP – North Unit (24,070 acres), and South Unit (46,159 acres) (NPS 2015c). The project corridor intersects the eastern edge of the TRNP – North Unit, where the NDDOT currently has

a Highway Easement Deed from the NPS for the US Highway 85 transportation corridor. In addition, roadways extending from US Highway 85 along the project corridor provide access to the TRNP – South Unit."

The administrative boundary of the TRNP includes public and private lands. Private land holdings, also known as inholdings, are parcels of property that were under private ownership prior to establishment of the park's administrative boundary. Public land holdings under the management of the NPS are open to the public, while privately owned inholdings are not. In accordance with FHWA's Section 4(f) Policy Paper, NPS-managed parcels located within the administrative boundary would be considered Section 4(f) properties. Privately owned property within the administrative boundary are not open to the public and are not managed by the NPS; therefore, private lands located within the administrative boundary of the park would not be considered Section 4(f) properties.

The NDDOT has an existing Highway Easement Deed (Deed) with the NPS for U.S. Highway 85. Due to the incorporation of design modifications, the project would not require additional area under the Deed; however, an additional 0.2 acres would be added to account for a recent, unrelated landslide repair project covered under a Special-Use Permit. It was understood by the NDDOT, FHWA, and NPS during the permitting process for the landslide repair project that this additional area would be added to the forthcoming U.S. Highway 85 Deed.

The intended use of this Deed is for the occupation and operation of a transportation corridor. Its intended use is not for recreation, wildlife or waterfowl refuge, or preservation of a historic site. Therefore, the area within the Deed (including the 0.2-acre Special-Use Permit area) is not considered a Section 4(f) property.

The entrance to the TRNP – North Unit is located off of U.S. Highway 85. Approaching the park entrance, U.S. Highway 85 includes a right-hand turn lane for southbound traffic and a climbing lane for northbound traffic. On the western side of U.S. Highway 85, NPS lands are fenced to keep the bison in the park.

Along the project corridor there are a total of five different USFS Management Area (MA) designations assigned to the various adjacent parcels of USFS-managed lands. All USFS-managed lands along the project corridor is publicly owned and open to the public; however, Section 4(f) only applies to MAs that are primarily used for recreation, public park, or wildlife and waterfowl refuge purposes.

A Land and Resource Management Plans (LRMP) is developed through public participation and provides the guiding principles in which National Forest System (NFS) lands are managed by the USFS. Within the LRMP, each parcel of land is assigned an MA designation. MAs are designated to ensure proper rules, guidelines, and prescriptions are implemented to achieve desired conditions and standards applicable to each MA. These rules, guidelines, and prescriptions were used for assessing Section 4(f) applicability for each MA. To determine the primary use of each MA along the project corridor, the following steps were taken:

1. Identification of each of the different MAs along the project corridor.
    - DPG MA 1.2a—Suitable For Wilderness
    - DPG MA 1.31—Backcountry

Recreation Non-Motorized

- DPG MA 3.51—Bighorn Sheep Habitat
- DPG MA 3.65—Rangelands with Diverse Natural-Appearing Landscapes
- DPG MA 6.1—Rangeland with Broad Resource Emphasis

2. The 2002 Record of Decision for DPG Final Environmental Impact Statement (EIS) and LRMP (USFS 2002) were referenced to identify the primary use of the MAs.
    - DPG MA 1.2a—Suitable for Wilderness Key words from the LRMP indicate these areas are managed to protect their wilderness character for potential future listing in the National Wilderness Preservation System. The USFS will honor valid existing rights even if it means that roads may be constructed in these areas, and land exchanges will be considered to resolve issues related to valid existing rights.
    - DPG MA 1.31—Backcountry Recreation Non-Motorized Key words from the LRMP indicate this area is managed to provide recreation opportunities.
    - DPG MA 3.51—Bighorn Sheep Habitat Key words from the LRMP indicate this area is managed to provide quality forage, cover, escape terrain, and solitude for bighorn sheep.

- DPG MA 3.65—Rangelands with Diverse Natural-Appearing Landscapes Key words from the LRMP indicate these areas are managed with emphasis on maintaining a naturally appearing landscape, while providing a mix of other rangeland values and uses. These areas have fewer livestock grazing developments. Oil and gas development may occur.
- DPG MA 6.1—Rangeland with Broad Resource Emphasis Key words from the LRMP indicate these areas are managed for the diversity of native plants and animals and ecological functions and processes, while providing livestock forage and a mix of other rangeland values and uses.

3. A meeting with the USFS, FHWA, and NDDOT was held to discuss the first two steps and then identify whether or not the MAs met the Section 4(f) requirements of recreation, Public Park, or wildlife and waterfowl refuge.
4. The MAs that were determined to be Section 4(f) property include: MA 1.31 Backcountry Recreation Non-Motorized; MA 3.51 Bighorn Sheep Habitat; and MA 1.2a Suitable for Wilderness. Concurrence and signatures were received from both the USFS and FHWA. Additionally, the NDDOT has existing easements with the USFS for U.S. Highway 85. The intended use of these easements is for the occupation and operation of a transportation corridor. Its intended use is not for recreation, wildlife or waterfowl refuge, or preservation of a historic site. Therefore, these existing easements are not considered Section 4(f) properties.

Alternative A (No Build): Under the No-Action alternative, visitors, employees and other users of the TRNP – North Unit and LMNG would continue to experience high traffic volumes, as well as an Level of Service (LOS) that is projected to be deficient by 2040. Access points to federal public lands would remain unconsolidated and off-set.

Alternative B: This alternative would include transportation and safety improvements throughout the corridor and provide for additional turn lanes at the TRNP – North Unit entrance, trail and potential re-alignment of the access point to Summit Campground. The visual quality of the experience of the Badlands is not anticipated to be diminished with the construction of the new highway. Wildlife crossings with fencing would improve safety and terrestrial habitat connectivity on public lands. The new highway would require a renewal of the same 9.4 acre area as the existing deed, plus 0.20 acres for unrelated landslide repair project. The proposed project would require a Special-Use Permit from the NPS for temporary access to 0.50 acres to correct landslide issues at Horseshoe Bend and additional temporary impacts on NPS-managed lands for fencing replacement and wildlife jump-outs. In Management Area (MA) 3.65, a 4.4 acre permit would be required and at MA 6.1, 69.2 acres would be required.

Alternative C: Alternative C would be similar to Alt B except for permanent USFS easements would be MA 3.65: 4.4 acres and MA 6.1: 53.0 acres.

Alternative F: Alt F would result in approximately 4.4 acres of impact to MA 3.65 and 44.0 acres to MA 6.1.

Conclusion: The three build alternatives would result in similar kinds of impacts to public lands. The level of impact increases with wider median widths, which requires additional right-of-way for construction.

7.3.19. AIR QUALITY

Alternative A (No Build): Under Alternative A, emissions of criteria pollutants from vehicles traveling along the existing roadway would continue and slightly increase as traffic volumes grow, and passing and congestion increases. However, any increases in emissions of criteria pollutants along the corridor are not anticipated to result in visual impairment of any Class I areas, cause or contribute to a violation of any National Ambient Air Quality Standards (NAAQS) or State Ambient Air Quality Standards (SAAQS), or expose sensitive receptors to substantially increased Particulate Matter (PM) concentrations. With the federal requirements for on- and off-road engines, criteria pollutant emissions from vehicles traveling on the existing roadway are anticipated to be minor and are not expected to adversely impact North Dakota's reasonable progress goals for 2018. In addition, under Alternative A, fugitive dust emissions resulting from the construction of the roadway would not occur. Traffic along the roadway would continue to contribute toward United States and North Dakota Greenhouse Gas (GHG) inventories. However, emissions from the annual traffic increase would represent a minor contribution toward United States and North Dakota GHG inventories.

Impacts Common to All Build Alternatives: The 2016 Traffic Operations Report (appended by reference) completed for the project indicates that traffic along this stretch of US Highway 85 is projected to grow at a rate of approximately 2.5 percent annually regardless of if the proposed project is constructed. Therefore, operation of the project is not anticipated to be a direct traffic contributor. According to the capacity analysis conducted as part of the Traffic Operations Report, expanding

the existing two-lane roadway to a four-lane roadway would improve the ability for vehicles to pass and improve the reliability of US Highway 85. Following construction of the project, the LOS along the project corridor is projected to be between 'A' and 'B' by 2040. Emissions of criteria pollutants from vehicles traveling along the project corridor would continue to occur; however, these emissions may be attenuated by eliminating the need for passing maneuvers and reducing roadway congestion. Any increases in fugitive dust or emissions of criteria pollutants associated with the annual increase in traffic along the corridor are not anticipated to result in visual impairment of any Class I areas, cause or contribute to a violation of any NAAQS or SAAQS, or expose sensitive receptors to substantially increased PM concentrations.

Conclusion: With the federal requirements for on- and off-road engines and continued fugitive dust management practices, fugitive dust and criteria pollutant emissions from vehicles traveling on the existing roadway are anticipated to be minor and are not expected to adversely impact North Dakota's reasonable progress goals for 2018. Traffic along the roadway would also contribute toward United States and North Dakota GHG inventories. However, emissions from the annual traffic increase would represent a minor contribution toward United States and North Dakota GHG inventories. Variations in air quality and climate change impacts between alternatives and options are anticipated to be negligible.

7.4. EVALUATION AND TESTING

To minimize impacts to WOUS, only fill material composed of sand, clay, rock, and gravel, or other naturally occurring inert material from uncontaminated sources would be used. NDDOT requires that borrow material is extracted from an approved material source site. The locations that have been approved by NDDOT and FHWA can be found on the NDDOT website. The extraction site would be examined to assess whether it is sufficiently removed from sources of pollution to provide reasonable assurance that the discharge material is not a carrier of contaminants. If the evaluation described above indicates the material is not a carrier of contaminants, then the required determinations pertaining to the presence or absence of contaminants can be made without testing. Evaluation must be in accordance with the requirements of 40 CFR § 230.60 and, if testing is required, it must comply with the requirements of 40 CFR § 230.61. No contaminated material would be deposited in WOUS.

7.5. CUMULATIVE IMPACTS

Cumulative impacts are the changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual discharges of dredged or fill material. Although the impact of a particular discharge may constitute a minor change in itself, the cumulative effect of numerous such piecemeal changes can result in a major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems, 40 CFR § 230.11(g). This section presents the requirements for cumulative impact analysis. The impacts of past, present, and reasonably foreseeable future projects will be combined with the potential impacts for Alternatives B, C and F in each resource area's cumulative geographic scope to determine cumulative impacts.

The proposed project is located within three 8-digit watersheds. The geographic area for this assessment is the Lower Little Missouri (HUC 10110205), Middle Little Missouri (HUC 10110203), and the Upper Heart (HUC 10130202). These watersheds cumulatively cover 5,691 square miles or 3,642,333 acres. All three HUC's that U.S. Highway 85 intersects were included in this analysis.

Past and Current Actions: Past actions which have potentially involved the discharge of dredged/fill material into WOUS primarily included the construction of housing/commercial developments, industrial facilities, and agriculture. Impacts associated with these activities has varied from complete loss to preservation.

In the last 10 years for the three watersheds, DA permits have authorized fill in approximately 45.5 acres of WOUS with 34.5 acres of permanent loss. The Corps required compensatory mitigation for 23.5 acres of aquatic resources within the last 10 years. The Corps also authorized approximately 13,000 LF of impacts between the three watersheds. It is important to note that not all projects authorized by nationwide permits require notification to the Corps and not all projects are authorized; therefore, the information above only reflects projects the Corps evaluated.

Between 1950 and 2010, North Dakota had the second lowest population growth in the Nation; however, between 2010 and 2014 North Dakota had the fastest growing population growth in the United States (Mather and Jarosz 2014). During this time, the Corps experienced an increase in permit actions associated with the economic development. Road projects

also became a priority in western North Dakota in order to accommodate the movement of people and goods. The data presented above is over a 10 year period; however, the majority of authorized impacts to the three watershed occurred in response to the extraction of resources and supporting infrastructure, which escalated in the period between 2010 and 2015. Approximately 1100 acres of aquatic resources exist on the landscape and 4500 acres of land within these three HUCS have been developed based on 2011 data (National Land Cover Data 2018). Analyzing the national land cover data and the information above, the Corps has authorized the fill of approximately 4 percent of aquatic resources within the three watersheds.

Reasonably Foreseeable Actions: As of September 2018, the Omaha District, North Dakota Regulatory Office, is currently reviewing permit applications or is involved in pre-application consultations for a variety of projects proposed within the three 8-digit HUC watersheds. Some of the pending actions below are local transportation projects. The remaining pending permit is for an access road. Additionally, there are three actions currently in the pre-application process for pipelines and Heart Butte Dam. Pre-application consultations occur in the early planning stages of a project and may not result in a permit action or impacts to WOUS.

Table 19: Pending Permits within the Lower Little Missouri (HUC 10110205), Middle Little Missouri (HUC 10110203), and the Upper Heart (HUC 10130202) watersheds.

Project File Number	Action Type	Project Name	County	HUC 8
NWO-2017-0250-BIS	NWP	McKenzie County Route 37	McKenzie	10110205
NWO-2018-0773-BIS	NWP	Stark County Bridge Replacement PCN 21764	Stark	10130202
NWO-2018-01622-BIS	NWP	Conoco Phillips Access Road	Dunn	10110205
NWO-2018-01185-BIS	SP	125th Avenue South	McKenzie	10110205

The overall project cumulative effects, discussion on the past, present, and reasonably foreseeable actions are presented in Chapter 8 of the DEIS. Alternatives B, C and F would have similar potential cumulative impacts as all build alternatives follow essentially the same alignment and would impact most of the same resources in similar locations and in a similar manner. Therefore, the resource category analyses that was completed above adequately addresses impacts associated with the two evaluated alternatives.

Overall Cumulative Impacts Conclusions: The various activities affecting resources and people in the project area as well as the proposed action could have localized variations at the project level. Some projects consist of access roads and other pre-application consultations include the construction and/or removal of pipelines. Those projects that involve the reconstruction of roadways, will be completed with the same type of inert material and would follow the same procedures discussed in this document. Other road projects would only be discharging clean fill from an approved material source site.

Cumulative effects of most concern on aquatic resources associated with the above listed reasonably foreseeable projects may include an increase in the loss of WOUS; impacts to fish and wildlife resources; loss of substrate; changes in water level fluctuations and water quality; impacts to aesthetic values; parks and other protected areas; and the discharge of pollutants. However, proper application of avoidance and minimization techniques would reduce the potential impacts that may occur. Compensatory mitigation for unavoidable impacts would reduce the cumulative impacts by maintaining and improving the quality and quantity of aquatic resources within the area. There would be no difference between the alternatives regarding current and reasonably foreseeable future projects impacting WOUS.

8.0 ACTIONS TO MINIMIZE ADVERSE EFFECTS

8.1. PLANNING AND DESIGN

During the development of the DEIS, several alternatives were considered and later dismissed. The preliminary design and planning phases considered additional impacts that would occur with a new 62 mile corridor, a few miles away from the existing highway. NDDOT and FHWA established that less impacts would occur environmentally and logistically if the existing corridor is utilized for the reconstruction of the roadway. Alternatives B, C and F would involve similar fill footprints and include the extension and replacement of existing culverts. In both cases, slopes would be constructed in a manner

that would minimize the highways encroachment into wetlands, while remaining in compliance with other federal safety regulations for the traveling public. Additional minimization would be completed during final design and permitting. Culverts and pipes as a general practice would be placed one foot below the existing channel and bottom elevation of aquatic resources. This ensures that natural flows would remain following construction activities and passage for aquatic organisms would not be disrupted.

During construction, measures would be taken to reduce impacts to waters immediately adjacent to U.S. Highway 85 and downstream aquatic resources. Turbidity, erosion, and sediment transport would be prevented through the implementation of BMP's. Other methods used for the SWPPP and Section 401 certification compliance would also minimize and prevent impacts to water quality.

9.0 COMPENSATORY MITIGATION

As per Section 2.2 Avoidance, Minimization and Compensation, compensatory mitigation would be required at a minimum of a 1:1 ratio for impacts to jurisdictional waters. During the permitting phase, it would be determined whether portions of the project would qualify for a Nationwide Permit verification or whether phases of the proposed project would be permitted as a whole. NDDOT would be required to submit a 12-point Draft Mitigation Plan prior to the issuance of an individual permit for the proposed project. NDDOT and FHWA have proposed approximately 12.97 acres and 8.80 acres of compensatory mitigation for Alternatives B and C, respectively, but during final design and permitting phase may opt to utilize a Corps approved mitigation bank. EO 11990 requires 6.54 acres and 4.89 acres of compensatory mitigation for natural wetlands under Alternatives B and C, respectively. Alternative F would result in approximately 7.86 acres of permanent fill in WOUS and 5.76 acres of temporary impacts.

Mitigation ratios would be established based on the proposed form of mitigation at the time of final design and permitting. The North Dakota Wetland Mitigation Banking Guidance document would be utilized to determine the appropriate mitigation methods and ratios. These include the following:

Table 20: Mitigation Ratios

Ratios	Methods
1:1	Restoration of a completely drained or filled wetlands by plugging the outlet and/or removing accumulated sediment, and implementing a re-vegetation plan.
1:1	Restoration of the outer, completely drained portion of a partially drained wetland, removing accumulated sediment, and implementing a wetland re-vegetation plan.
2:1	Restoration of the deeper portion of a partially drained wetland basin that continued to pond water after completion of the drainage project.
2:1	Restoration of an impaired wetland by removing the sediment accumulated in the basin.
2:1	Creation of a new wetland by excavation, establishment of ditch blocks, or construction of small dams along non-wetland drainage-ways.
5:1	Enhancement of a wetland basin by establishing and maintaining a 50-foot vegetated, upland buffer around the perimeter of each mitigation wetland.
10:1	Preservation of existing wetland habitat as a minor component of a mitigation bank featuring restored and/or created wetlands.
20:1	Enhancement of a mitigation tract by establishing permanent grassland cover outside of the 50-foot buffer to square off the boundaries of a mitigation bank and develop a reasonable land use plan for the surrounding property.

10.0. CONCLUSION

The 404(b)(1) Guidelines are the substantive environmental standards by which all Section 404 permit applications are evaluated. The Guidelines, which are binding regulations, were published by the Environmental Protection Agency at 40 CFR Part 230 on December 24, 1980. The fundamental precept of the Guidelines is that discharges of dredged or fill material into waters of the United States, including wetlands, should not occur unless it can be demonstrated that such discharges, either individually or cumulatively, will not result in unacceptable adverse effects on the aquatic ecosystem. The Guidelines specifically require that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the

alternative does not have other significant adverse environmental consequences." 40 CFR 230.10(a). Based on this provision, the applicant is required in every case (irrespective of whether the discharge site is a special aquatic site or whether the activity associated with the discharge is water dependent) to evaluate opportunities for use of non-aquatic areas and other aquatic sites that would result in less adverse impact on the aquatic ecosystem. A permit cannot be issued, therefore, in circumstances where a less environmentally damaging practicable alternative for the proposed discharge exists (except as provided for under Section 404(b)(2)). (40 CFR 1502.14, 33 CFR Part 325 Appendix B(7) and 40 CFR 230.5(c)). However, this regulatory statue does not limit the inherent flexibility provided in the Guidelines for implementing these provisions.

The preamble to the Guidelines is very clear in this regard:
Of course, as the regulation itself makes clear, a certain amount of flexibility is still intended. For example, while the ultimate conditions of compliance are "regulatory", the Guidelines allow some room for judgment in determining what must be done to arrive at a conclusion that those conditions have or have not been met.

The Corps asked for additional information from FHWA and NDDOT regarding the safety of Alternative B over Alternative C. Alternative B incorporates a 52-ft divided, depressed median and the overall width of the roadway would be 124-ft. Alternative C is a divided flush median, with a width of 20-ft. The overall roadway width would be 84-ft. FHWA's Resource Center and R & D Design Laboratory conducted a study using the Interactive Highway Safety Design Model (IHSDM), which is a software program designed to allow transportation professionals to apply methods that generate quantitative safety data that can be incorporated into design of roadways. The focus of the analysis was to provide a predictive model to estimate crash performance of the two project alternatives, B and C. Both alternatives consist of expanding the capacity of the existing U.S. Highway 85 corridor from 2-lanes to 4-lanes. The key difference between the two alternatives is the width of the median. The following tables are the results of the model:

Table 21: Comparison of probability of accidents between Alt B and C

	Alternative B Total	Alternative C Total	Comparison
First year of analysis	2015	2015	
Last year of analysis	2040	2040	
Evaluated length (miles)	62.2366	62.2366	
Average Future Road AADT (vpd)	5895	5895	
Predicted Crashes			Increase (%)
Total Crashes	1721.81	1794.76	4.24
Fatal and injury crashes	936.06	976.16	4.28
Property Damage only crashes	785.76	818.60	4.18

Based on the above data, the Corps has determined that Alternative B meets the purpose and need for the project, Alternatives C and F do not appear to provide the traveling public with a "safer" road.

The Corps also looked at the WOUS impacts associated with each of the crossings along the 62-mile corridor. The difference between Alternative B and C is a total of 4.17 acres of impacts to WOUS. Based on a 62-mile corridor, that amounts to approximately 0.07 acres per mile of roadway. The project impacts the same resources for all build alternatives, the difference is only in the width of the median from 6-ft to 52-ft. There are only 3 crossings under Alt B that trigger the need for an individual permit and exceed the 0.50 acreage limit of a Nationwide 14. Out of the 112 impacted areas for Alt B, 109 crossings would qualify for a Nationwide 14 Linear Projects. Alt C and F would have similar impacts, with only 1 crossing requiring an individual permit.

In conclusion, based on the information provided and the public interest review; the Corps has determined that based on the increased safety associated with a depressed, wide median of 52-ft; that Alt B is the only practicable alternative that meets the purpose and need of the project. The overall impacts of the Applicant's preferred alternative do not significantly degrade the aquatic resources found within the project area and are not significantly different from Alt C and F. In addition, although the Guidelines specify that an alternative with less adverse impact on the aquatic ecosystem exists, it

can be rejected if it would have "other significant adverse environmental consequences". In this case, the Corps has determined that although safety is not an environmental consequence it has overriding implications on society with the reduction in usually fatal head-on collisions.

11.0. LITERATURE CITED

Ahmed, M.M., M. Abdel-Aty and J. Park. 2015. Evaluation of the Safety Effectiveness of the Conversion of Two-Lane Roadways to Four-Lane Roadways. Transportation Research Record.

American Association of State Highway Officials (AASHTO). 2011. A policy on geometric design of highways and streets (Green Book). Washington.

Bureau of Economic Analysis (BEA). 2016. CA25N Total Full-Time and Part-Time Employment by NAICS Industry: North Dakota, McKenzie County, Stark County. Last updated November 17, 2016. Accessed May 26, 2017. https://www.bea.gov/regional/index.htm

Cowan, J.P. 1994. Handbook of Environmental Acoustics. Van Nostrand Reinhold, New York.

Egan, M.D. 1988. Architectural Acoustics, McGraw-Hill Book Company

Energy Information Administration (EIA). 2018. Short-Term Energy Outlook: Forecast Highlights. Released March 2018. Accessed March 16, 2018. https://www.eia.gov/outlooks/steo/report/

Federal Highway Administration (FHWA). 2005. Environmental Review Process Guidance. https://www.fhwa.dot.gov/map21/docs/12mar_prop_env_proc_review_pc.pdf

Federal Highway Administration (FHWA). 2006. Construction Noise Handbook. FHWA-HEP-06-015. https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/

Federal Highway Administration (FHWA). 2015b. Reference Sourcebook for Reducing Greenhouse Gas Emissions from Transportation Sources. Section 6: Transportation System Management Strategies, Roundabouts. Last updated December 22, 2015. Accessed May 15, 2017. https://www.fhwa.dot.gov/environment/climate_change/mitigation/publications/reference_sourcebook/page06.cfm#s5

Federal Highway Administration (FHWA). 2018. Memorandum – U.S. 85 Safety Analysis. FHWA Resource Center for Safety, November 5, 2018

Fishing. (2017, August 11). Retrieved September 20, 2018, from https://www.nps.gov/thro/planyourvisit/fishing.htm

IPaC: Information for Planning and Consultation. (n.d.). Retrieved from https://ecos.fws.gov/ipac/

Job Service North Dakota. 2017. North Dakota's Oil and Gas Economy. Accessed August 16, 2017. https://www.ndworkforceintelligence.com/gsipub/index.asp?docid=578

Mather, Mark and Beth Jarosz. 2014. US Energy Boom Fuels Population Growth in Many Rural Counties. Accessed December 2, 2015. http://www.prb.org/Publications/Articles/2014/us-oil-rich-counties.aspx

National Land Cover Database (2018, April 16). Retrieved September 21, 2018, from https://www.mrlc.gov/index.php

National Park Service (NPS). 2014. Foundation Document – Theodore Roosevelt National Park.

National Park Service (NPS). 2015a. Environmental Assessment for the North Unit Visitor Center Replacement. Accessed June 13, 2017.https://parkplanning.nps.gov/document.cfm?parkID=167&projectID=4824 &documentID=66118

National Park Service (NPS). 2015b. Outdoor Activities -- Theodore Roosevelt National Park. Last updated April 10, 2015. Accessed July 10, 2017. https://www.nps.gov/thro/planyourvisit/outdooractivities.htm

National Park Service (NPS). 2015c. Park Statistics. Accessed August 7, 2017. https://www.nps.gov/thro/learn/management/statistics.htm

National Park Service (NPS). 2016. Environmental Assessment for the Communication Tower Replacement and Co-location in Theodore Roosevelt National Park. Accessed January 10, 2018. https://parkplanning.nps.gov/documentsList.cfm?parkID=167&projectID=55468

National Park Service (NPS). 2017a. Theodore Roosevelt National Park Monthly Public Use Report (December 2008 through December 2017). Accessed February 5, 2018. https://irma.nps.gov/Stats/SSRSReports/Park%20Specific%20Reports/Monthly%20Public%20Use?Park=THRO

North Dakota Department of Transportation (NDDOT), Federal Highway Administration (FHWA). 2018a. Draft Environmental Impact Statement: US Highway 85 I-94 Interchange to Watford City Bypass (McKenzie County Road 30) Project 9-085(85)075 PCN 20046. Stark, Billings, and McKenzie Counties, North Dakota: Environmental Transportation Section, Bismarck, North Dakota.

North Dakota Department of Transportation (NDDOT). 2018b. Alternatives Methodology. Prepared by KLJ. April 2018

North Dakota Department of Transportation (NDDOT). 2017. Noise Report. Prepared by KLJ.

North Dakota Department of Transportation (NDDOT). 2016. U.S. Highway 85, I-94 Interchange to Watford City Bypass Biological Evaluation. Prepared by KLJ, September 2016.

North Dakota Department of Transportation (NDDOT). 2016. Northern Long-eared bat summer acoustic survey results.

North Dakota Department of Transportation (NDDOT). 2016. Northern Long-eared Bat Habitat Assessment & Acoustic Survey Plan

North Dakota Department of Transportation (NDDOT). 2016. Traffic Operations Report.

North Dakota Department of Transportation (NDDOT). 2016. NDDOT Historical State Traffic Counts (2009-2016). Accessed August 8, 2017. https://www.dot.nd.gov/business/maps-portal.htm#trafficcountsstateandcity

North Dakota Game and Fish Department (NDGF). 2016. Black-footed ferret. https://gf.nd.gov/wildlife/id/carnivores/black-footed-ferret (Accessed 12/04/2018).

North Dakota Industrial Commission (NDIC). 2015a. North Dakota Department of Mineral Resources: House Appropriations Committee Presentation. Accessed December 22, 2015. https://www.dmr.nd.gov/oilgas/presentations/FullHouseAppropriations010815.pdf

North Dakota Industrial Commission (NDIC). 2015b. North Dakota Drilling and Production Statistics: Annual Production Reports for 2009-2015. Accessed August 9, 2016. https://www.dmr.nd.gov/oilgas/stats/statisticsvw.asp

North Dakota Industrial Commission (NDIC). 2016a. Department of Mineral Resources: Drilling Statistics (Prior to 1951–2016). Accessed August 8, 2017. https://www.dmr.nd.gov/oilgas/stats/DrillStats.pdf

North Dakota Industrial Commission (NDIC). 2016c. Oil in North Dakota: 2009 Production Statistics. Accessed August 8, 2017. https://www.dmr.nd.gov/oilgas/stats/statisticsvw.asp

North Dakota Industrial Commission (NDIC). 2017. Industrial Commission of North Dakota, Oil and Gas Division: 2014-2017 Monthly Statistical Updates. Accessed March 16, 2018. https://www.dmr.nd.gov/oilgas/stats/statisticsvw.asp

North Dakota Tourism Department (NDTD). 2015. North Dakota Tourism: Annual Report 2015. Accessed August 9, 2016. http:// www.ndtourism.com/sites/default/master/files/pdf/2015ANNUALREPORT.pdf

Stamatiadis, N., D. Lord, J. Pigman, J. Sacksteder and W. Ruff. 2001 Safety Impacts of Design Element Trade-offs for Multilane Rural Highways. American Society of Civil Engineers. 10.1061/(ASCE)TE.1943-5436.0000221

State Historical Society of North Dakota (SHSND). 2016. A History of Fossil Fuels in North Dakota. Accessed September 16, 2016. http://ndstudies.gov/energy/level1/module-2-petroleum-natural-gas/history-fossil-fuels-north-dakota

Theodore Roosevelt Expressway (TRE). Undated. About us. Accessed August 16, 2017. http://www.trexpressway.com/AboutUs

Uhlman, K., D.P. Guertin, L. R. Levick, T. Sprouse, E. Westfall, C. Holmgren and A.P. Fisher. 2008. NEMO Watershed-Based Plan Middle Gila Watershed. Water Resources Research Center, University of Arizona Tucson, Arizona.

U.S. Census Bureau. 2015a. 2011–2015 American Community Survey 5-Year Estimates for Fairfield and Grassy Butte, North Dakota. Accessed August 8, 2017. https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml

U.S. Census Bureau. 2015b. 2011–2015 American Community Survey 5-year Estimates: Billings County, North Dakota. Accessed May 24, 2017. https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml

U.S. Census Bureau. 2016a. 2012-2016 American Community Survey 5-Year Estimates for Grassy Butte and Watford City, North Dakota. Accessed August 8, 2017. https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml

U.S. Department of Agriculture (USDA). 2012a. Census of Agriculture, County Profile: McKenzie County, Billings County, Stark County. Accessed October 24, 2017. https://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/North_Dakota/index.asp

U.S. Department of Agriculture (USDA). 2012b. Prime and Unique Farmlands. Released March 2012. Accessed July 6, 2017. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1187178.pdf

U.S. Environmental Protection Agency (EPA). 1980. Guidelines Preamble "Regulations vs. Guidelines". Federal Register, December 24, 1980.

U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (Corps). 1990. Memorandum of Agreement. The determination of mitigation under the Clean Water Act Section 404(b)(a) Guidelines. https://www.epa.gov/cwa-404/memorandum-agreement

U.S. Environmental Protection Agency (EPA). 1993. Memorandum: Appropriate Level of analysis required for evaluating compliance with the Section 404 (b)(1) Guidelines Alternatives Requirements. https://www.epa.gov/cwa-404/memorandum-appropriate-level-analysis-required-evaluating-compliance-section-404b1

U.S. Environmental Protection Agency (EPA). 2008. Compensatory Mitigation for losses of Aquatic Resources; Final Rule. Federal Register, Volume 73, Number 70, Thursday, April 10, 2008. https://www.epa.gov/sites/production/files/2015-03/documents/2008_04_10_wetlands_wetlands_mitigation_final_rule_4_10_08.pdf

U.S. Forest Service (USFS). Undated (d). Recreation - Dakota Prairie Grasslands. Accessed August 8, 2017. https://www.fs.usda.gov/recmain/dpg/recreation

U.S. Geological Survey (USGS). 2013. 2012-2013 Minerals Yearbook. North Dakota. https://minerals.usgs.gov/minerals/pubs/state/2012_13/myb2-2012_13-nd.pdf

Van der Kamp, G., & Hayashi, M. (1998). The Groundwater Recharge Function of Small Wetlands in the Semi-Arid Northern Plains. Great Plains Research: A Journal of Natural and Social Sciences, 39-56. Retrieved September 12, 2018, from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1362&context=greatplainsresearch

U.S. Highway 85, I-94 Interchange to Watford City Bypass
SECTION 404(b)(1) ALTERNATIVES ANALYSIS

APPENDIX 1: ALTERNATIVES MATRIX

Practicability Category	Factor	No Action	Alternative B: 4-Lane Section on existing alignment - Divided depressed median w/options *Preferred*	Alternative C: 4-Lane Section on existing alignment - Divided flush median w/options	Super 2 Highway with passing and turning lanes	Rehabilitation of existing roadway with wider shoulders	Alternative F: 4-Lane section on existing alignment undivided	4-Lane outside existing alignment 1-2 miles away	4-Lane outside existing alignment with two lanes; 1-2 miles away
Meet the Overall Project Purpose		No - Current traffic conditions would remain and worsen in the future	Yes	Yes	No - Turning and passing lanes already exist and pose safety concerns	No - Shoulder widening does not address safety on the roadway	No - would not address safety	Yes	Yes
Available	Available for Acquisition	Yes - ROW already owned by NDDOT	Yes - with minimal expansion of existing ROW	Yes - with minimal expansion of existing ROW	Yes - ROW already owned by NDDOT	Yes - ROW already owned by NDDOT	Yes - ROW already owned by NDDOT	Yes - with the purchase of a new corridor	Yes - with the purchase of a new corridor
Logistics	Utilization of existing road and Right of Way (ROW)	Yes - ROW already owned by NDDOT and on existing roadway	Yes - Utilizes existing road, with some new ROW required	Yes - Utilizes existing road, with some new ROW required	Yes - ROW already owned by NDDOT and on existing roadway	Yes - ROW already owned by NDDOT and on existing roadway	Yes - ROW already owned by NDDOT and on existing roadway	No - Requires new corridor and new roadway	Yes - with one 2 lane portion on existing alignment and on constructed 1-2 miles away
	Access to Theodore Roosevelt National Park	Yes - using existing access	Yes - using existing access	Yes - using existing access	Yes - using existing access	Yes - using existing access	Yes - using existing access	Yes - with the original U.S. Highway 85 corridor maintained	Yes - with the original U.S. Highway 85 corridor maintained
	Consistent with other design/standards	No - with current and future traffic projections	Yes	Yes	No - with current and future traffic projections	No - with current and future traffic projections	No - would not meet median design criteria	Yes	Yes
	Safety concerns relative to increased traffic volumes on Highway 85	No - Current traffic conditions would remain	Yes	Yes	No - Turning and passing lanes already exist and pose safety concerns	No - Shoulder widening does not address safety on the roadway	No - increased accident potential with no median	Yes	Yes

U.S. Highway 85, I-94 Interchange to Watford City Bypass
SECTION 404(b)(1) ALTERNATIVES ANALYSIS

	Minimal impacts to existing utilities	Yes - no impacts to utilities	Yes - utilities shifted within the ditch section	Yes - utilities shifted within the ditch section	Yes - utilities shifted within the ditch section	Yes - utilities shifted within the ditch section	Yes - utilities shifted within the ditch section	Yes - with the original Highway 85 corridor maintained	Yes - with the original U.S. Highway 85 corridor maintained
Existing Technology	Topography and other site conditions feasible for project construction	Yes - with the stabilization of specific sections in the Badlands	Yes - with the stabilization of specific sections in the Badlands	Yes - with the stabilization of specific sections in the Badlands	Yes- with the stabilization of specific sections in the Badlands	Yes - with the stabilization of specific sections in the Badlands	Yes - with the stabilization of specific sections in the Badlands	Yes - with the stabilization of specific sections in the Badlands	Yes - with the stabilization of specific sections in the Badlands
Cost	Reasonable acquisition costs	Yes	Yes	Yes	Yes	Yes	Yes	No - requires the purchase of a new project corridor	No - requires the purchase of a new project corridor
	Overall scope/project	Yes - no additional cost with no action alternative	Yes – 419 Million without options	Yes – 389 Million without options	Yes - ~1.7 million	Yes - ~2.7 million	Yes - ~9.8 million	No - Costs exorbitant for a new roadway potentially $600/Million+	No - Costs exorbitant for a new roadway potentially $600/Million+

APPENDIX 2: CORPS ALTERNATIVES ANALYSIS TABLE AND ALTERNATIVES CARRIED FORWARD.

Preliminary Alternative	Considered Reasonable/Feasible	Reasoning if Considered Unreasonable/Infeasible	Corps Comments
Super 2 Highway with Passing Lanes and Turning Lanes	No	Would not meet the project's purpose to improve statewide system linkage (i.e., four-lane continuous link) connecting I-94 and U.S. Highway 2.	Would most likely have less environmental impacts to WOUS. Would not address safety or accommodate present and future capacity issues.
Major Rehabilitation of Existing Roadway with Wider Shoulders (8 feet wide) - No Passing Lanes Added	No	Would not increase operational effectiveness or address capacity-related deficiencies (i.e., percent time spent following) associated with passing demand and ability. As passing demand increases on a two-lane roadway, the available capacity decreases; thus, causing two-lane roadway service quality to deteriorate at relatively low demand flows.	Would most likely have less environmental impacts to WOUS. Would not address safety or accommodate present and future capacity issues.
Alternative B: Four-lane Section using Existing Alignment: Divided - Depressed Median	Yes		Will be carried forward for analysis under 404(b)(1)
Alternative C: Four-lane Section using Existing Alignment: Divided - Flush Median	Yes		Will be carried forward for analysis under 404(b)(1)
Alternative F: Four-lane Section using Existing Alignment: Undivided	No	An undivided four-lane roadway alternative was eliminated from detailed analysis due to the fact it would not meet the criteria and standards regarding medians in the AASHTO Green Book (Section 7.2.10). Undivided, multi-lane arterials have significantly more collisions than multi-lane facilities with medians; therefore, multi-lane, undivided facilities are discouraged.	This alternative would have less impacts to WOUS but does not meet the purpose and need of the proposed project.
Four-lane Section Outside Existing Alignment: Divided - 1 to 2 miles away; Four Lanes on New Alignment	No	Would not utilize existing alignment.	A new alignment could result in greater impacts to WOUS
Four-lane Section Outside Existing Alignment: Divided - 1 to 2 miles away (Northbound or Southbound); Two Lanes on New Alignment	No	Would not utilize existing alignment.	A new alignment could result in greater impacts to WOUS
Six-Lane Highway	No	Would be excessive and unnecessary to meet current and future traffic projections; would not be a cost-effective solution.	Would have greater environmental consequences than any of the other alternatives.
Elevated Roadway	No	Would have height and width restrictions; may prohibit overpass wildlife corridor/crossings; would not be a cost-effective solution; would have access issues.	Would have significantly less impacts to WOUS; but would be cost prohibitive and have impacts to the view-shed.

One-way Pair	No	Would have issues with access on and off highway.	Would have significantly less impacts to WOUS. Will be carried forward for analysis under 404(b)(1)
Construct a Pipeline	No	Would not meet current and future traffic projections; would only increase the capability of moving certain products and not people and goods.	This alternative only alleviates a portion of the traffic associated with U.S. Highway 85. Although truck traffic is a motivating factor in the expansion of the highway; pipelines have other environmental impacts as well that would have to be assessed and this alternative does not address traffic capacity or safety concerns for the traveling public.
Public Transit System (e.g., Bus)	No	Would not meet current and future traffic projections; would only increase the capability of moving people and not products and goods.	This alternative has no impacts to WOUS but only addresses a small percentage of the traffic associated with U.S. Highway 85. It does not address concerns with industrial and commercial vehicle use of the corridor.

APPENDIX 3: LOCATION AND IMPACTS OF ROADWAY CROSSINGS REQUIRING A CWA SECTION 404 AUTHORIZATION UNDER ALT B AND C.

Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Alt. B Temp. Impact (acres)	Alt. C Temp. Impact (acres)	Alt. B Perm. Impact (acres)	Alt. C Perm. Impact (acres)	Reason For Discharge	Existing Structure	Proposed Structure Alt B	Proposed Structure Alt C
29b	Sec. 35, T141N, R99W	Ditch	Artificial	Y	0.00	0.01	0.02	0.01	Roadway widening/culvert extension	60" x 188' RCP[1]	Extend 75' East	Extend 10' East
32	Sec. 35, T141N, R99W	Slope	Natural	Y	0.01	0.00	0.01	0.00	Roadway widening/culvert extension	36" x 125' RCP	Extend 85' East & Bore Add'l 30" x 210' pipe	Extend 20' East Bore Add'l 30" x 145' pipe
33a	Sec. 26, T141N, R99W	Slope	Natural	Y	0.32	0.00	0.16	0.00	Roadway widening	NA	NA	NA
34	Sec. 22, T141N, R99W	Slope	Natural	Y	0.05	0.05	0.13	0.09	Roadway widening/culvert extension	Triple 24" x 80' RCP	Extend 95' West	Extend 55' West
35a	Sec. 22, T141N, R99W	Ditch	Artificial	Y	0.06	0.01	0.41	0.46	Roadway widening	NA	NA	NA
35b	Sec. 22, T141N, R99W	Slope	Natural	Y	0.35	0.56	0.01	0.02	Roadway widening/culvert extension	18" x 86' RCP	Extend 20 ' West	Extend 20' West
35c	Sec. 23, T141N, R99W	Ditch	Artificial	Y	0.00	0.07	0.14	0.07	Roadway widening/culvert extension	18" x 86' RCP	Extend 80' East	Extend 20' East
35d	Sec. 23, T141N, R99W	Slope	Natural	Y	0.25	0.00	0.13	0.00	Roadway widening	NA	NA	NA
36a	Sec. 22, T141N, R99W	Ditch	Artificial	Y	0.06	0.00	0.07	0.13	Roadway widening	NA	NA	NA
36b	Sec. 23, T141N, R99W	Riverine	Natural	Y	0.01	0.04	0.05	0.04	Roadway widening/ box culvert installation	75' - Three span bridge	Double barrel box culvert: 184' long, 9' wide, and 10' tall (each barrel)	Double barrel box culvert: 136' long, 9' wide, and 10' tall (each barrel)
36d	Sec. 22, T141N, R99W	Riverine	Natural	Y	0.02	0.03	0.06	0.05	Roadway widening/ box culvert installation	75' - Three span bridge	Double barrel box culvert: 184' long, 9' wide, and 10' tall (each barrel)	Double barrel box culvert: 136' long, 9' wide, and 10' tall (each barrel)
36e	Sec. 22, T141N, R99W	Ditch	Artificial	Y	0.25	0.06	0.15	0.34	Roadway widening	NA	NA	NA
36g	Sec. 23, T141N, R99W	Slope	Natural	Y	0.13	0.00	0.28	0.00	Roadway widening	NA	NA	NA

U.S. Highway 85, I-94 Interchange to Watford City Bypass
SECTION 404(b)(1) ALTERNATIVES ANALYSIS

36h	Sec. 23, T141N, R99W	Ditch	Artificial	Y	0.00	0.02	0.05	0.04	Roadway widening	NA	NA	NA
50	Sec. 2, T141N, R99W	Basin	Natural	Y	0.01	0.00	0.02	0.00	Roadway widening	NA	NA	NA
52a	Sec. 3, T141N, R99W	Slope	Natural	Y	0.02	0.01	0.01	0.03	Roadway widening/box culvert extension	Dbl 8'x5' x 86' RCB[2]	NA	Extend 25' West
52b	Sec. 2, T141N, R99W	Slope	Natural	Y	0.01	0.01	0.06	0.04	Roadway widening/box culvert extension	Dbl 8'x5' x 86' RCB	Extend 88' East	Extend 26' East
274a	Sec. 35, T142N, R99W	Slope	Natural	Y	0.75	0.84	0.51	0.11	Roadway widening/box culvert extension	Triple 10'x8' x 86' RCB	Extend 88' East	Extend 26' East
274b	Sec. 34, T142N, R99W	Slope	Natural	Y	0.36	0.33	0.06	0.15	Roadway widening/box culvert extension	Triple 10'x8' x 86' RCB	NA	Extend 25' West
274c	Sec. 34, T142N, R99W	Ditch	Artificial	Y	0.09	0.01	0.02	0.10	Roadway widening	NA	NA	NA
274d	Sec. 34, T142N, R99W	Ditch	Artificial	Y	0.00	0.01	0.00	0.01	Roadway widening	NA	NA	NA
78a	Sec. 2, T142N, R99W	Slope	Natural	Y	0.10	0.01	0.13	0.08	Roadway widening/culvert extension	48" x 104' RCP	Extend 70' East	Extend 90' East
78b	Sec. 3, T142N, R99W	Slope	Natural	Y	0.07	0.03	0.04	0.04	Roadway widening/culvert extension	48" x 104' RCP	Extend 35' West	Extend 20' West
273a	Sec. 34, T143N, R99W	Slope	Natural	Y	0.02	0.11	0.01	0.06	Roadway widening/ culvert extension	72" x 152' RCP	NA	Extend 55' East
273b	Sec. 34, T143N, R99W	Slope	Natural	Y	0.13	0.09	0.68	0.19	Roadway widening/culvert extension	72" x 152' RCP	Extend 65' West	Extend 10' West
79a	Sec. 3, T142N, R99W	Basin	Natural	Y	0.00	0.00	0.03	0.03	Roadway widening/culvert extension	72" x 88' RCP	Extend 35' East	Extend 20' East
79b	Sec. 3, T142N, R99W	Slope	Natural	Y	0.14	0.05	0.10	0.01	Roadway widening/culvert extension	72" x 88' RCP	Extend 65' West	Extend 25' West
90b	Sec. 22, T143N, R99W	Slope	Natural	Y	0.00	0.10	0.00	0.05	Culvert extension	73"x45" x 158' RC Cattle Pass	NA	Extend 35' East

U.S. Highway 85, I-94 Interchange to Watford City Bypass
SECTION 404(b)(1) ALTERNATIVES ANALYSIS

90c	Sec. 21, T143N, R99W	Slope	Natural	Y	0.11	0.26	0.47	0.06	Roadway widening/culvert extension	73"x45" x 158' RC Cattle Pass	Extend 65' West	Extend 35' West
94a	Sec. 21, T143N, R99W	Slope	Natural	Y	0.04	0.00	0.09	0.00	Roadway widening	NA	NA	NA
99a	Sec. 16, T143N, R99W	Slope	Natural	Y	0.09	0.10	0.18	0.08	Roadway widening/culvert extension	72" x 72' RCP	Extend 80' West	Extend 5' West
99b	Sec. 15, T143N, R99W	Slope	Natural	Y	0.02	0.04	0.04	0.05	Roadway widening/culvert extension	72" x 72' RCP	Extend 15' East	Extend 20' East
104	Sec. 9, T143N, R99W	Slope	Natural	Y	0.09	0.00	0.09	0.00	Roadway widening	NA	NA	NA
105a	Sec. 9, T143N, R99W	Ditch	Artificial	Y	0.00	0.01	0.06	0.06	Roadway widening/culvert extension.	64" x 80' RCP	Extend 100' West	Extend 10' West
105b	Sec. 10, T143N, R99W	Ditch	Artificial	Y	0.03	0.03	0.02	0.04	Roadway widening/culvert extension	64" x 80' RCP	Extend 15' East	Extend 10' East
114a	Sec. 4, T143N, R99W	Slope	Natural	Y	0.01	0.01	0.04	0.03	Roadway widening/culvert extension	64" x 136' RCP	Extend 95' West	Extend 10' West
114b	Sec. 3, T143N, R99W	Slope	Natural	Y	0.03	0.04	0.01	0.04	Roadway widening/ culvert extension	64" x 136' RCP	NA	Extend 20' East
115b	Sec. 34, T144N, R99W	Slope	Natural	Y	0.11	0.04	0.11	0.20	Roadway widening/culvert extension	48"x72" x 106' RC Cattle Pass	Extend 35' East	Extend 45' East
115c	Sec. 33, T144N, R99W	Slope	Natural	Y	0.17	0.03	0.23	0.08	Roadway widening/culvert extension	48"x72" x 106' RC Cattle Pass	Extend 105' West	Extend 45' West
116	Sec. 34, T144N, R99W	Slope	Natural	Y	0.00	0.14	0.00	0.10	Roadway widening	NA	NA	NA
117a	Sec. 28, T144N, R99W	Slope	Natural	Y	0.17	0.00	0.09	0.00	Roadway widening	NA	NA	NA
118a	Sec. 28, T144N, R99W	Slope	Natural	Y	0.08	0.09	0.40	0.14	Roadway widening/culvert extension	72" x 128' RCP	Extend 95' West	Extend 25' West
118b	Sec. 27, T144N, R99W	Slope	Natural	Y	0.28	0.22	0.05	0.18	Roadway widening	72" x 128' RCP	NA	Extend 25' East

U.S. Highway 85, I-94 Interchange to Watford City Bypass
SECTION 404(b)(1) ALTERNATIVES ANALYSIS

119b	Sec. 22, T144N, R99W	Slope	Natural	Y	0.07	0.08	0.03	0.10	Roadway widening	NA	NA	NA
123b	Sec. 22, T144N, R99W	Slope	Natural	Y	0.13	0.07	0.02	0.08	Roadway widening/culvert extension	36" x 114' RCP	Extend 15' East	Extend 40' East
124	Sec. 22, T144N, R99W	Slope	Natural	Y	0.05	0.03	0.11	0.01	Roadway widening	NA	NA	NA
125	Sec. 22, T144N, R99W	Ditch	Artificial	Y	0.00	0.00	0.22	0.22	Roadway widening	NA	NA	NA
126	Sec. 22, T144N, R99W	Ditch	Artificial	Y	0.00	0.00	0.07	0.07	Roadway widening	NA	NA	NA
128a	Sec. 15, T144N, R99W	Ditch	Artificial	Y	0.01	0.00	0.02	0.03	Roadway widening/culvert extension	48" x 134' RCP	Extend 15' East	Extend 20 ' East
128b	Sec. 15, T144N, R99W	Ditch	Artificial	Y	0.00	0.00	0.01	0.01	Roadway widening/culvert extension	48" x 134' RCP	Extend 110' West	Extend 25' West
129	Sec. 15, T144N, R99W	Basin	Natural	Y	0.00	0.01	0.01	0.01	Roadway widening	NA	NA	NA
135a	Sec. 14, T144N, R99W	Slope	Natural	Y	0.01	0.03	0.06	0.08	Roadway widening/culvert extension	64" x 78' RCP	Extend 20' East	Extend 20' East
135b	Sec. 11, T144N, R99W	Slope	Natural	Y	0.03	0.06	0.19	0.09	Roadway widening/culvert extension	64" x 78' RCP	Extend 110' West	Extend 55' West
142a	Sec. 11, T144N, R99W	Slope	Natural	Y	0.02	0.04	0.06	0.08	Roadway widening/culvert extension	74" x 172' RCP	Extend 10' East	Extend 25' East
142b	Sec. 11, T144N, R99W	Slope	Natural	Y	0.08	0.01	0.17	0.11	Roadway widening/culvert extension	74" x 172' RCP	Extend 90' West	Extend 30' West
142c	Sec. 11, T144N, R99W	Preamble	Natural	Y	0.12	0.02	0.10	0.01	Roadway widening	NA	NA	NA
142d	Sec. 11, T144N, R99W	Slope	Natural	Y	0.00	0.04	0.00	0.01	Roadway widening	NA	NA	NA
143	Sec. 11, T144N, R99W	Slope	Natural	Y	0.00	0.01	0.00	0.01	Roadway widening	72" x 56' RCP	Extend 30' East	Extend 35' East
151a	Sec. 33, T145N, R98W	Slope	Natural	Y	0.01	0.03	0.02	0.05	Roadway widening	64" x 140' RCP	NA	Extend 15' East

U.S. Highway 85, I-94 Interchange to Watford City Bypass
SECTION 404(b)(1) ALTERNATIVES ANALYSIS

151b	Sec. 32, T145N, R98W	Preamble	Natural	Y	0.21	0.14	0.43	0.22	Roadway widening/culvert extension	64" x 140' RCP	Extend 75' West	Extend 30' West
153a	Sec. 32, T145N, R98W	Basin	Natural	Y	0.06	0.03	0.11	0.05	Roadway widening	NA	NA	NA
153b	Sec. 33, T145N, R98W	Ditch	Artificial	Y	0.00	0.00	0.01	0.01	Roadway widening	NA	NA	NA
161	Sec. 29, T145N, R98W	Slope	Natural	Y	0.03	0.03	0.10	0.03	Roadway widening	NA	NA	NA
164a	Sec. 29, T145N, R98W	Slope	Natural	Y	0.03	0.06	0.22	0.03	Roadway widening/culvert extension	36" x 220' RCP	Extend 150' West	Extend 55' West
164b	Sec. 29, T145N, R98W	Slope	Natural	Y	0.01	0.00	0.01	0.02	Roadway widening/culvert extension	36" x 220' RCP	Extend 20' East	Extend 50' East
166	Sec. 29, T145N, R98W	Slope	Natural	Y	0.00	0.01	0.00	0.01	Roadway widening	30" x 172' RCP	NA	Extend 30' East
167	Sec. 29, T145N, R98W	Slope	Natural	Y	0.00	0.01	0.05	0.05	Roadway widening	NA	NA	NA
176	Sec. 19, T145N, R98W	Slope	Natural	Y	0.01	0.01	0.06	0.04	Roadway widening/culvert extension	30" x 166' RCP	Extend 125' West	Extend 70' West
177	Sec. 19, T145N, R98W	Slope	Natural	Y	0.01	0.07	0.17	0.01	Roadway widening/culvert extension	30" x 104' RCP	Extend 95' West	Extend 40' West
178	Sec. 19, T145N, R98W	Slope	Natural	Y	0.01	0.01	0.02	0.01	Roadway widening/culvert extension	30" x 94' RCP	Extend 110' West	Extend 35' West
180	Sec. 18, T145N, R98W	Preamble	Artificial	Y	0.32	0.03	0.15	0.01	Roadway widening	NA	NA	NA
187a	Sec. 12, T145N, R99W	Ditch	Artificial	Y	0.06	0.01	0.07	0.13	Roadway widening	NA	NA	NA
187b	Sec. 12, T145N, R99W	Slope	Natural	Y	0.37	0.38	0.19	0.21	Roadway widening	82" x 196' RCP	NA	NA
187c	Sec. 12, T145N, R99W	Ditch	Artificial	Y	0.02	0.01	0.06	0.08	Roadway widening	NA	NA	NA
187d	Sec. 12, T145N, R99W	Slope	Natural	Y	0.09	0.05	0.23	0.07	Roadway widening/culvert extension	82" x 196' RCP	Extend 85' East	NA

U.S. Highway 85, I-94 Interchange to Watford City Bypass
SECTION 404(b)(1) ALTERNATIVES ANALYSIS

187f	Sec. 12, T145N, R99W	Slope	Natural	Y	0.04	0.04	0.03	0.03	Roadway widening	NA	NA	NA
187g	Sec. 12, T145N, R99W	Ditch	Artificial	Y	0.07	0.21	1.17	0.81	Roadway widening	NA	NA	NA
198a	Sec. 23, T146N, R99W	Slope	Natural	Y	0.01	0.01	0.05	0.04	Roadway widening/culvert extension	30" x 160' RCP	Extend 65' West	Extend 50' West
198b	Sec. 24, T146N, R99W	Preamble	Natural	Y	0.01	0.06	0.15	0.10	Roadway widening/culvert extension	30" x 160' RCP	Extend 35' East	Extend 10' East
201b	Sec. 13, T146N, R99W	Slope	Natural	Y	0.08	0.06	0.32	0.25	Roadway widening/culvert extension	66" x 240' RCP	Extend 60' West	Extend 40' West
202a	Sec. 14, T146N, R99W	Ditch	Artificial	Y	0.00	0.00	0.10	0.10	Roadway widening	NA	NA	NA
202b	Sec. 14, T146N, R99W	Slope	Natural	Y	0.16	0.04	0.20	0.13	Roadway widening/ box culvert extension	Dbl 10'x6' x 184' RCB	Extend 98' West	Extend 41' West
202c	Sec. 13, T146N, R99W	Slope	Natural	Y	0.00	0.06	0.00	0.07	Roadway widening/ box culvert extension	Dbl 10'x6' x 184' RCB	NA	Extend 33' East
202d	Sec. 13, T146N, R99W	Preamble	Natural	Y	0.00	0.12	0.00	0.04	Roadway widening	NA	NA	NA
205b	Sec. 35, T147N, R99W	Slope	Natural	Y	0.11	0.10	0.27	0.12	Roadway widening/culvert extension	Dbl 30" x 118' RCP	Extend 85' West	Extend 40' West
205c	Sec. 36, T147N, R99W	Slope	Natural	Y	0.33	0.29	0.04	0.16	Roadway widening/culvert extension	Dbl 30" x 118' RCP	Extend 5' East	Extend 10' East
206a	Sec. 35, T147N, R99W	Slope	Natural	Y	0.11	0.11	0.49	0.17	Roadway widening/culvert extension	48" x 144' RCP	Extend 60' West	Extend 10' West
206b	Sec. 36, T147N, R99W	Slope	Natural	Y	0.00	0.09	0.00	0.16	Roadway widening	48" x 144' RCP	NA	Extend 25' East
206c	Sec. 36, T147N, R99W	Ditch	Artificial	Y	0.09	0.01	0.06	0.14	Roadway widening	NA	NA	NA
211a	Sec. 25, T147N, R99W	Preamble	Natural	Y	0.96	0.96	0.17	0.17	Roadway widening	NA	NA	NA
211b	Sec. 25, T147N, R99W	Ditch	Artificial	Y	0.02	0.02	0.29	0.29	Roadway widening	30" x 216' RCP	Bore Add'l 30" x 216' pipe	Bore Add'l 30" x 216' pipe

U.S. Highway 85, I-94 Interchange to Watford City Bypass
SECTION 404(b)(1) ALTERNATIVES ANALYSIS

211c	Sec. 25, T147N, R99W	Slope	Natural	Y	0.02	0.02	0.01	0.01	Roadway widening	NA	NA	NA
215a	Sec. 24, T147N, R99W	Slope	Natural	Y	0.20	0.20	0.02	0.02	Roadway widening	30" x 338' RCP	NA	NA
215b	Sec. 24, T147N, R99W	Slope	Natural	Y	0.13	0.13	0.14	0.14	Roadway widening	30" x 338' RCP	NA	Extend 5' East
218	Sec. 13, T147N, R99W	Slope	Natural	Y	0.05	0.05	0.08	0.08	Roadway widening	NA	NA	NA
236	Sec. 26, T148N, R99W	Slope	Natural	Y	0.19	0.19	0.03	0.03	Roadway widening	NA	NA	NA
237	Sec. 26, T148N, R99W	Slope	Natural	Y	0.01	0.01	0.01	0.01	Roadway widening	NA	NA	NA
250a	Sec. 23, T148N, R99W	Slope	Natural	Y	0.03	0.03	0.17	0.17	Roadway widening/culvert extension	9.5' x 228' SPPC[3]	Extend 42' East	Extend 42' East
250b	Sec. 22, T148N, R99W	Slope	Natural	Y	0.01	0.01	0.05	0.05	Roadway widening/culvert extension	9.5' x 228' SPPC	Extend 46' West	Extend 46' West
252a	Sec. 22, T148N, R99W	Slope	Natural	Y	0.06	0.05	0.14	0.21	Roadway widening/culvert extension	60" x 186' RCP	Extend 20' West	Extend 40' West
252b	Sec. 23, T148N, R99W	Slope	Natural	Y	0.02	0.06	0.35	0.18	Roadway widening/culvert extension	60" x 186' RCP	Extend 85' East	Extend 45' East
255	Sec. 14, T148N, R99W	Slope	Natural	Y	0.06	0.03	0.25	0.17	Roadway widening/culvert extension	42" x 204' RCP	Extend 70' East	Extend 25' East
258	Sec. 15, T148N, R99W	Slope	Natural	Y	0.11	0.17	0.01	0.02	Roadway widening	60" x 268' RCP	NA	Extend 15' West
259a	Sec. 36, T149N, R99W	Slope	Natural	Y	0.17	0.10	0.06	0.13	Roadway widening/culvert extension	60" x 297' CSP[4]	Extend 10' West	Extend 30' West
259b	Sec. 36, T149N, R99W	Slope	Natural	Y	0.06	0.05	0.24	0.12	Roadway widening/culvert extension	60" x 297' CSP	Extend 160' East	Extend 90' East
262	Sec. 31, T149N, R98W	Slope	Natural	Y	0.03	0.01	0.10	0.05	Roadway widening	NA	NA	NA
267b	Sec. 24, T149N, R99W	Slope	Natural	Y	0.01	0.01	0.01	0.02	Roadway widening	NA	NA	NA

U.S. Highway 85, I-94 Interchange to Watford City Bypass
SECTION 404(b)(1) ALTERNATIVES ANALYSIS

267c	Sec. 24, T149N, R99W	Slope	Natural	Y	0.13	0.13	0.34	0.34	Roadway widening/culvert extension	8' x 102' SPPC	Extend 90' West	Extend 90' West
267d	Sec. 24, T149N, R99W	Slope	Natural	Y	0.12	0.12	0.02	0.02	Roadway widening/culvert extension	8' x 102' SPPC (CL)	51' West	51' West
										71"x47" x 31' CSP (Appr)	Extend 5' Bk	Extend 5' Bk
267e	Sec. 19, T149N, R98W	Ditch	Artificial	Y	0.03	0.03	0.01	0.01	Roadway widening/culvert extension	71"x47" x 31' CSP	Extend 20' Ahd	Extend 20' Ahd
272a	Sec. 27, T142N, R99W	Slope	Natural	Y	0.31	0.39	0.07	0.13	Roadway widening/culvert extension	Triple 10' x 8' x 96' RCBC	Extend 11' West	Extend 31' West
272b	Sec. 26, T142N, R99W	Slope	Natural	Y	0.35	0.62	0.40	0.12	Roadway widening/culvert extension	Triple 10' x 8' x 96' RCBC[5]	Extend 98' East	Extend 32' East
totals					10.29	9.33	14.04	9.97				

1 - RCP – reinforced concrete pipe
2 – RCB - reinforced concrete box
3 – SPPC – Structural plate pipe corrugated
4 – CSP – Corrugated steel pipe
5 RCBC – reinforced concrete box culvert